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Approves New Nine-Point Forestry Program

Recently Organized Forest Industries Council Inaugurates New Measures For the More Efficient Management of Woodlands By Private Industrial Consumers — Officers and Members Are Listed.

Producers of over two-thirds of all U. S. forest products have crossed industry lines for the first time and joined forces for a drive to insure increased reproduction and growth in U. S. forests, according to an announcement on May 9 by P. H. Glatfelter, Spring Grove, Pa., chairman of a newly organized Forest Industries Council.

Manufacturers of pulp, paper and lumber who are members of the American Paper and Pulp Association, the American Pulpwood Association, and the National Lumber Manufacturers Association have approved a nine-point program seeking improved production in U. S. woodlands which have carried a heavy load during the war years.

Approves New Common Standards

The new common standard for forest management calls for private industrial users of commercial forests to seek greatly increased fire protection for all lands, adopt and extend measures for continuous production and reforestation on cut-over lands, encourage private ownership for all lands which can be profitably operated for continuous production, seek public acquisition of lands which cannot be operated profitably privately, advocate taxes which encourage private ownership of timberland, support public regulation of cutting practices where necessary under state law, seek adequate financing for state forestry organizations, and develop a more complete utilization of wood now being harvested.

"The U. S. has sufficient forest type land to produce a sustained harvest equal to our normal requirements of wood. The successful application of this new program should go a long way toward assuring a capacity growth and abundance of forest products of all kinds continuously," said E. W. Tinker, secretary of the American Paper and Pulp Association, in commenting on the policy statement which he said represented the first occasion on which all major users of American forests had joined in a common undertaking.

Leading Paper Mills Are Represented

Forest products manufacturers represented by the newly formed national organization include 225 pulp and paper manufacturers, approximately 175 producers of pulpwood, and about 1100 lumber manufacturers in all parts of the United States. The Council was formed in 1943 as the instrument of common action for the three industries. The new forest policy was developed early this year. Its text is as follows:

"Permanent industries capable of producing continuous supplies of forest products are essential to the national welfare. The necessity for wise use of our forest resources in maintaining such industries and the communities dependent upon them is recognized.

Adopts Nine-Point Program

"Having faith that private enterprise and initiative can provide the most effective management, use, and renewal of our Nation's forests, the Forest Industries Council pledges united leadership for betterment of America's forests, and the attainment of continuous forest production. In the fulfillment of this leadership, the Forest Industries Council agrees to:

1. Promote the extension of permanent and dependable protection against fire to all forest lands, irrespective of ownership.
2. Urge all forest owners and forest operators to develop and adopt forest practices designed to insure the continuous production of timber on all areas as harvested, irrespective of ownership.
3. Confirm the sound economic policy of encouraging private ownership of lands which are being or can be profitably managed for continuous production of forest crops, and encourage a national land policy to include the sale and exchange of public lands in order to restore desirable lands to private ownership as well as to consolidate public holdings.
4. Encourage public ownership and practical management of forest lands which are incapable of producing sufficient wood to maintain profitable private ownership.
5. Advocate equalization of state and local taxes on forest lands that reasonably support their fair proportion of local responsibilities, and that encourage private ownership of forest land.
6. Support in each forested state a competent, adequately staffed and financed state forestry organization, qualified to manage state-owned forest lands, to administer and enforce state laws relative to privately owned forest lands, and to provide adequate cooperation with all timberland owners in the state in solving forestry problems.
7. Support public regulation when necessary or desirable, to be administered under state law. The need or desirability of such regulation and

(Continued on page 26)

Canada Relaxes Government War Controls

Paper Industry Not Expected To Be Greatly Affected Immediately But More Relief Measures Are Promised In Future — Propose Inland Route To U.S. — To Discuss Newsprint Problems In June.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 14, 1945—Promptly after V-E Day, the Government has begun to relax controls over manpower and materials and to reduce taxes that add to production costs. The immediate effect as far as the pulp and paper industry is concerned will not be great, but both directly and indirectly there will be a measure of relief, and there is the promise of the Government that other relief measures will follow just as rapidly as conditions permit. According to the Acting Prime Minister, "the process of revising or removing controls over materials, productive capacity and manpower and of expanding civilian employment has begun and will be accelerated as acute conditions are overcome."

Reduction or discontinuance is announced of certain taxes on building materials and producers' machinery and equipment. These changes will facilitate the increase in supplies, and in conjunction with the removal or relaxation of controls on certain construction materials and metals, will permit a beginning in industrial modernization and expansion, of which the pulp and paper industry has an extensive deferred program, in some cases already under way.

It is further announced that "in the very near future" further relaxation in wartime restrictions on travel to the United States may be expected, also that the Foreign Exchange Control Board will shortly announce amendments to present restrictions so that foreign exchange will be available to meet all reasonable travel requirements of Canadians for any purpose. In general it is further announced that prices will continue to be firmly controlled to prevent inflation, the most severe pressure making for which may be expected yet to come.

Proposes Inland Route to U. S.

The post-war projects now actively to the fore in Canada include the building of the long-talked-of canal across the Isthmus of Chignecto, to connect the Bay of Fundy with the Gulf of the St. Lawrence. Among the advantages of this project is that it would provide cheap, all-year inland transportation by water from the most extensive pulpwood regions in Eastern Canada to the Atlantic seaboard of the United States.

The site of the proposed canal is at the boundary line between Nova Scotia and New Brunswick, where a neck of land of only about twenty miles across separates the Bay of Fundy from the Gulf of St. Lawrence at Northumberland Strait, south of Prince Edward Island. The canal has long been advocated. Indeed, it was first mooted by French engineers during the French regime 300 years ago, and its many influential advocates now see no reason why the project should be delayed once the war has been finished, as it would stimulate both primary and secondary industries in the Maritime Provinces and the province of Quebec, including the pulp and paper industry, and incidentally provide in its construction substantial after-the-war employment.

The canal would revive coastwise shipping by enabling small vessels, incapable of weathering the long, rough trip around the coast of Nova Scotia, which juts far out into the Atlantic, to ply to U. S. ports from sheltered ports in the River and Gulf of St. Lawrence, in Prince Edward Island, and in northern New Brunswick and northern Nova Scotia. This would not only put producers in these regions in a position to carry exports and imports to and from Boston and other U. S. Atlantic ports by an inland route navigable by coastal boats, but would also enable coastal vessels to connect at the port of Saint John, N. B., with ocean lines. This inland route to Boston, by the way, would pass the Island of Campobello, where the late President Roosevelt had his summer home at the ancestral Roosevelt estate on that island.

Among the pulpwood resources to which this inland route would give connection are those of the famous Anticosti Island, formerly a feudal possession of Muenier, one-time chocolate king of France, and now the property of Consolidated Paper Corporation. This island the Germans tried to buy just prior to the war. In the same region is the mill of the Gulf Pulp and Paper Company at Clarke City, Que. with a daily capacity of 420,000 lbs. of ground wood pulp; the great mills of the Quebec North Shore Paper Company, at Baie Comeau, with a daily capacity of 840,000 lbs. of newsprint; and farther east the many important pulp and paper mills in the Saguenay and Lake St. John districts. Closer to the Atlantic, the route would tap vast forest regions in New Brunswick and Nova Scotia.

This canal project has already been the subject of lengthy investigation and engineering study by both provincial and federal authorities, and at present it is being strongly advocated by Maritime newspapers, headed by the Saint John Telegraph-Journal and Evening Times-Globe, who declare that it should be at the top of the list of post-war public works by Canada.

To Discuss Newsprint Problems

United States and Canadian Government newsprint officials, will meet with newspaper publishers from both countries at a three-day meeting in the Windsor Hotel, Montreal, starting June 6. About 50 delegates from both countries will discuss newsprint problems and allotments.

It is understood that among the questions to be discussed will be that of the possibility of Canada being able to supply U. S. requirements in excess of the present commitment of 200,000 tons of newsprint per month. It has also become known that American publishers have expressed great interest in the offer of Canadian newsprint manufacturers to consider again the production of 30-pound newsprint, in order that added printing surface area may be obtained from the present limited weight of newsprint supplied. The manufacturers, it seems, are prepared to undertake the production of light-weight newsprint on a considerable scale if required. The issue, it appears, is one that now rests with the mechanics of newspaper press rooms.

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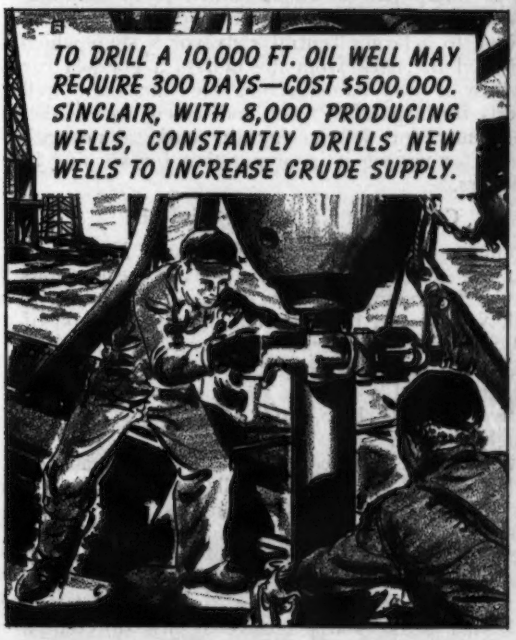

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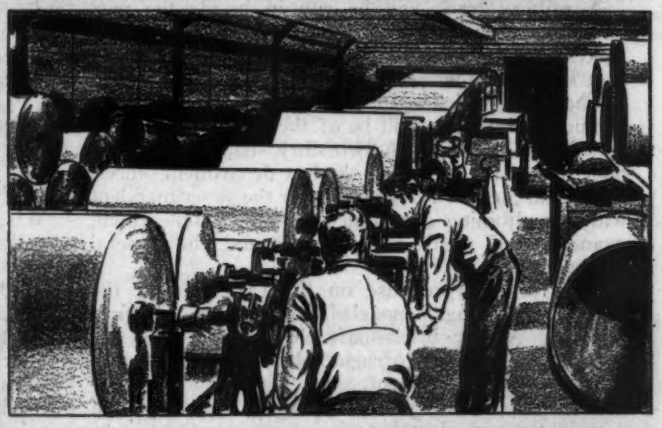

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Menasha Woodenware Corp. Plans Expansion

Construction Starts On New $100,000 Corrugating Plant and Remodeling of Warehouse—Nekoosa-Edwards Disposing of 100 Tons of Wet Bark Daily — Thilmany Completes Labor Negotiations.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 14, 1945—Work on a $100,000 construction project has been started at the Menasha Woodenware Corporation, Menasha, Wis., manufacturers of corrugated paper and wood containers. War Production Board approval was granted last month for the project, which includes a new corrugator building with a two-story wing, a new roll storage house and the remodeling of a warehouse. Fluor Brothers Construction Company, Oshkosh, has the contract.

Foundations for the wing to the corrugator building were poured last week, and brick-laying was to begin in the current week. The work is expected to be completed within five or six months.

The corrugator building is to be a one-story structure, 32 by 377, with an L-shaped wing joining on to the remodeled storehouse and present corrugator building. Of brick and steel, the walls are to be lined with white glazed tile. The foundation is of concrete and the floor of reinforced concrete.

In addition to the new corrugator machine, which is due to arrive about November 1, the main corrugator building will house modern washrooms and a generator room. Company officials said the new machine will produce in one shift what was formerly done in two shifts. The machine is to be equipped with a double cut-off and will be an 85-inch machine in width as against the 72-inch width of the present machine. The corrugator now in use will be shipped to the company's factory at Durham, N. C.

A railway track will be run in beside the new building so that sheets can be loaded directly into cars. Boxes may be loaded into both trucks and railway cars from all other points.

The wing, which is to be on the north side of the corrugator building, will be of the same construction and 32 by 118 feet. A two-story structure, the top floor will be used to house the box department offices, which will include a large office for the superintendent with an adjoining conference room, a sample room, women's and men's wash rooms and the general clerical offices.

The No. 7 warehouse on the east area of the property is being remodeled, modernized and fireproofed. A new brick-shaft elevator has been installed. The present corrugator building will be used as a finishing department.

The company this year is observing its ninety-fifth year in the same location.

Consolidated Appoints Plastics Manager

Delbert C. Rowland has been appointed manager of the Plastics division of Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., George W. Mead, president of the company, announced last week.

Mr. Rowlands, who has had 24 years of experience in various branches of Consolidated, began his new duties May 5. Entering the employ of the company in 1921, he served at the main office for six months and then engaged in cost accounting at the Biron, Wis., division. In 1928 he was transferred to the company's Thunder Bay mill at Port Arthur, Ontario, where he remained for five years.

After the Canadian mill was sold, he returned to Wisconsin Rapids and was employed in the main office as general cost accountant. In 1942, when the Plastic division began operations, he entered that field and has been active in sales, accounting and plant organization.

Mr. Rowland succeeds C. F. Marschner, who has taken a position at the United States Forest Products Laboratory at Madison, Wis. Mr. Rowland attended Lawrence College at Appleton, Wis. He is married and the father of three sons.

Appointed Safety Director

William Van Hout has been appointed safety director at the Kimberly, Wis., mill of Kimberly-Clark Corporation. He succeeds Jack Girard. He has assumed his duties at the mill.

Disposes of 100 Tons of Wet Bark Daily

Nekoosa-Edwards Paper Company, Port Edwards and Nekoosa, Wis., is disposing of more than 100 tons of wet bark daily. Its disposal system was built from used equipment because of wartime restrictions.

At the start, small conveyors carried the waste bark to dump trucks which hauled it to dumping grounds. Later these conveyors were arranged to converge to a larger central conveyor system which discharged the bark from the mill to a gondola car in which it was hauled from the immediate mill property for disposal. Presses and screens were added subsequently for de-watering the bark, along with a "hog" for cutting it in preparation for burning in the boilers.

Completes Labor Negotiations

Thilmany Pulp and Paper Company, Kaukauna, Wis., has completed its labor contract negotiations with the International Brotherhood of Papermakers, Local No. 20, and the International Brotherhood of Pulp, Sulphite and Papermill Workers, Local No. 147, L. C. Smith, director of the industrial relations department, announced last week. The contract will become effective June 1, 1945, and will remain in force through May 31, 1946.

Thilmany has agreed to an extended vacation schedule which provides that all employees having from 1 year to 5 years of continuous service prior to June 1, 1945, shall be eligible for a vacation of one week of 48 hours with pay, and all employees having 5 years or more before June 1, 1945, shall be eligible for two weeks with pay.

All shift workers will receive a shift differential amounting to 3 cents per hour while working on the second and third shifts. The company also has agreed to increase its contribution to 65% of the total premium for group insurance for the employees and their dependents.

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Midwest Is Uncertain About Paper Supply

Heavy World-Wide Paper Demand Expected To Maintain Relatively Tight Civilian Market For Rest of Year—Payrolls Decline In Illinois — Mills Present Timely Exhibits — Other Late News.

CHICAGO, Ill., May 14, 1945—The Chicago paper market, while it certainly heaved a sigh of relief over the termination of the German phase of the war, gave no indication that it expected things to get better for some time to come. There were reports of increases in the supply of nitrating pulp but the increases are said to be so inconsequential as to do little or no good in the face of the extreme shortages.

Meanwhile, local paper executives expected little or no pulp to come out of Europe this year and were therefore pessimistic over the immediate outlook. All lines reported a similarly tight situation with the board industry, in particular, confronted with the problem of re-supplying a vast military operation in the midst of changing its base of operations.

Gravest concern to the local distributors, was the intensifying of over-the-counter business procedure which created more heavy demands for wrapping, writing, printing and similar papers. There is a definite belief that business in general will overcome its reconversion "slump" far in advance of the paper trade, thus intensifying the need for careful public relations policies as well as a determined effort to simplify the manpower and shortage problem at the earliest possible moment.

Paper Payrolls Decline

Employment and payrolls in the paper goods and printing industries in Illinois were both down on February, 1945 as compared to January 15, the employment figure being 1.7 per cent lower and the payroll change down 2.7 per cent. The 255 firms reporting showed a total of 36,452 employees for the period and a total payroll of $1,700,805. Most of the current January-February decline in employment and payrolls was reported concentrated in the paper goods, printing and publishing groups which generally show reductions in work forces during that time of year. Preliminary reports for March show a slight upturn, according to reports from the Department of Labor of the State, which collects and reports the figures. However, inability to get merchandise for printing and publishing and general usage was beginning to have a very definite effect on the employment and payroll figures.

Appointed WPB Aide

W. Irving Osborne, Jr., president of the National Paperboard Association and affiliated with the Cornell Wood Products Company of Chicago, has recently been appointed deputy director of the paperboard division of the War Production Board. He will serve as chief aide to R. A. Powers, director of this Division.

Salesmen To View New Films

The western division of the Salesmen's Association of the Paper Industry will hold routine business sessions on both Monday, May 14 and 21 at the Hotel Sherman. However, on May 28, the salesmen and their guests will be given the opportunity to see the new United Air Lines films depicting plans and possibilities in commercial aviation in post war days to come.

Mills Present Timely Exhibits

The Chicago paper trade is interested in the current display of advertising being held at the Art Institute in this city under the auspices of the Art Directors Club of Chicago. Several well known paper firms are among those who have presented timely advertisements and there is particular interest in the combined job done by the Dayton Envelope Company, Aetna Paper Mills, Howard Paper Mills and the Maxwell Paper Mills. The advertisement "Archway of a New World" was considered as especially timely, effective and dignified and representative of the best in paper advertising.

George Gibson Appointed Chairman

George K. Gibson, veteran sales executive of the Mosinee Paper Mills, has been appointed national membership chairman by the Salesmen's Association of the Paper Industry. Ben K. Babbitt of the Brown Company, "head guy" of a hundred special events in the western division, is listed as national chairman of the social committee.

Urges Continued Salvage of Paper

WASHINGTON, D. C., May 16, 1945—Although waste paper collections in March, aggregating 640,000 tons, were the highest for any month since the current paper salvage campaign began in the fall of 1943, efforts to collect and salvage paper should not be relaxed since wartime demands continue to rise, the Conservation and Salvage Division of the War Production Board reported today.

"The highest previous month's collection—622,000 tons—was attained in May 1944," W. Thomas Hoyt, director of the Conservation and Salvage Division, said. "Receipts of waste paper for January and February this year were 537,000 tons and 515,000 tons, respectively.

"While the March collection figures are encouraging, inventories of waste paper do not reflect increased receipts since the demand for paper products has kept consumption abreast of receipts.

"Two serious problems face the Conservation and Salvage Division. They are maintenance of the public's interest in waste paper salvage following the close of hostilities in Europe, and the setting up of summer collection programs to offset the decreases resulting from closing of schools."

Education officials and salvage committee chairmen are being urged by the Conservation and Salvage Division to work out plans for keeping school children actively engaged in waste paper salvage during the vacation period. Emphasizing the need for keeping up waste paper collections during the summer, Mr. Hoyt said:

"We need to maintain collections of about 600,000 tons of waste paper each month during the summer. Unless we do this, we shall not be able to meet the demands of our armed forces for the shipping materials they will need.

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Strength—the greatest possible strength with economy—governs paper makers' choice of P-426 Beckamine. This highly favored urea formaldehyde resin is a dependable product, stable in storage. You can definitely rely on it for exceptional results—greater wet strength, as well as tensile strength, fold and Mullin. There are no complications in the use of this standard material which is easily applied directly in the beater, fan pump, or the head box. It can also be applied to the sheet at the size press. Write to the Sales Department in Detroit.

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Maine-New Hampshire TAPPI Meets

The Maine-New Hampshire Group of the Technical Association of the Pulp and Paper Industry met at the Elmwood Hotel, Waterville, Maine, on Friday, May 11, 1945. Clifford Patch of the Eastern Corporation presided as chairman. About 100 attended, many being unable to be present because of a heavy snowfall.

W. V. Torrey and G. R. Nelson of the S. D. Warren Company, Cumberland Mills, Maine, presented a paper on "The pH Meter as a Tool for Black Liquor Analysis." This paper will be published later in the PAPER TRADE JOURNAL.

L. S. Wilcoxson of the Babcock & Wilcox Company, New York, N. Y described "The Magnesium Base Process for the Manufacture of Sulphite Pulp." This was a review of previously published papers by the speaker, W. H. Tomlinson and R. S. Hatch.

Current Sizing Problems

In the afternoon there was a symposium presented on Current Sizing Problems in which Thomas Morse of the Hercules Powder Company, Harry Duston of the Monsanto Chemical Company, Walter Morehouse of the National Oil Products Company, F. A. Strovink of the American Cyanamid and Chemical Company, F. P. Dean of the Socony-Vacuum Company, Ray Kiltie of the Staley Sales Company participated. Although the addresses were off the record many suggestions were made to assist the paper companies to meet the present situation in which the industry and suppliers are operating under WPB order L-387 which requires mills to use 30% less rosin size than they did in 1944.

Among the suggestions given were the following: 1. Change sizing specifications where possible. 2. Utilize full technical control in the papermaking operation. 3. Get cooperation from paper purchasers relative to changing specifications. 4. Consider the addition of wax to rosin size. 5. Fortify the size at calenders and size tub with such materials as starch, glue, protein, casein, etc. 6. Use selected pulps, insofar as possible in furnishes. 7. Use materials such as Mersize to extend the rosin. 8. Use sodium aluminate to increase alumina without affecting pH. 9. Use special nonrosin chemicals for special grades. 10. Use chlorinated starch in beater as a protective colloid to obtain greater size dispersion, and 11. Use wet-strength resins in some grades.

Following the technical sessions reports were read by H. E. Pratt, Pejepscot Paper Company, secretary-treasurer of the group and W. E. Brawn, chairman of the membership committee. The latter reported that the group now has about 185 paid-up members.

Clifford Patch Elected Chairman

The nominating committee consisting of F. A. Soderberg, Jack O'Brien and W. E. Brawn presented the following nominations who were then elected to serve during the coming year. Chairman—Clifford Patch, Eastern Corporation, Bangor, Maine, Vice-Chairman—E. E. Sawyer, Keyes Fibre Company, Waterville, Maine, Secretary-Treasure—H. E. Pratt, Pejepscot Paper Company, Brunswick, Maine, Executive Committee—W. V. Torrey, S. D. Warren Company, Cumberland Mills, Maine; C. M. Myers, Hollingsworth & Whitney Company, Waterville, Maine; A. P. Gregory, Maine Seaboard Paper Company, Bucksport, Maine; J. F. Wright, National Aniline Division, Boston, Mass.; and E. J. Lamb, Oxford Paper Company, Rumford, Maine.

At the evening dinner the officers were introduced and brief talks were given by W. L. Foote, chairman of the New England TAPPI and R. G. Macdonald, secretary of the Technical Association. The principal address was made by Capt. D. A. Pray, U. S. A. who reported many experiences that he had at Guadalcanal.

The local arrangements were taken care of by C. M. Myers and E. E. Sawyer. The program committee consisted of J. F. Wright, W. V. Torrey, and A. P. Gregory.

Those in Attendance

Those in attendance included: R. G. Adams, J. P. Bainbridge, Jr., E. R. Barker, F. J. Barrows, N. I. Bearse, N. Bernheimer, N. A. Billings, C. T. Bockus, W. E. Brawn, A. F. Brunelle, R. E. Briggs, L. M. Burns, B. E. Caswell, J. B. Calkin, W. E. Colbath, J. E. Connell, J. C. Dean, F. E. Desmond, B. Donoghue, P. A. Donaghy, J. H. Draper, Jr., H. E. Duston, F. J. Desmond, Sidney Collins, Ivar Ekholm, E. J. Ferrell, W. F. Foote, H. L. Glass, A. P. Gregory, A. Hamilton, Charles Harris, S. S. Harkavy, E. C. Hilton, W. L. Hinds, A. H. Holbrook, C. I. Horton, H. F. Jacques, C. E. Jennings, G. R. Johnson, C. H. Kent, J. W. King, R. E. Kilty, Raymond Lear, H. S. Leonard, J. C. Marrone, L. R. Mitchell, R. F. McNett, W. B. Morehouse, H. S. Morse, P. H. Mueller, C. Morganstern, C. M. Myers, R. G. Macdonald, Robert Nivison, N. L. Nourse, J. J. O'Brien, F. W. O'Rourke, Clifford Patch, E. A. Poirier, H. E. Pratt, G. B. Rawlings, G. H. Rand, Jr., C. A. Reddy, W. H. Randall, E. S. Redman, L. B. Rogers, A. E. Regnier, E. E. Sawyer, O. C. Sadler, H. G. Schlaman, J. H. Snyder, F. A. Strovink, F. A. Soderberg, A. H. Staffon, R. B. Stewart, E. L. Tewksbury, W. L. Tilley, W. V. Torrey, V. C. Totman, J. Turbyne, J. W. Thomas, H. J. Waldron, C. W. Walters, H. E. Wallace, G. D. Watson, W. E. Wentworth, F. O. White, J. H. White, H. H. Whittem, R. C. Whitney, A. B. Williams, J. F. Wright and A. B. Wood.

To Open Paper Plant in Meridian

MERIDIAN, Miss., May 7, 1945—H. T. Newell, Sr., and associates of Jackson, last week announced purchase of the A. J. Lyon & Co. properties in Meridian, which will be utilized soon for an exclusively wholesale paper business.

The property is located at 3506-8-10-12 Front street. Mr. Newell and associates are well experienced and have been highly successful in this line of trade.

The establishment will open as soon as merchandise is available and when the structure has been improved.

Mr. Newell said, when open for business, the company will have a complete stock of printing papers, wrapping papers and all types of paper specialties. He added that mill connections are the finest and the merchandise will be of the best.

"We," declared Mr. Newell, "are looking forward to the time when we will become a permanent part of the business life of Meridian and will have the opportunity of better serving the merchants, industrial plants, and printers of Meridian and its trade territory. We have not yet decided on a trade name or the personnel for the Meridian branch. That will be done as early as possible."

Shipping RAYCO WET-LAP PULP

TO HELP PAPER MAKERS GET *Capacity Production!*

SHORTAGE of labor and pulp producing capacity has made it difficult for many paper makers to keep paper making machines in full operation. In response to the paper industry's need for help, Railway Supply applied its broad fiber experience and technical affiliations to the problem of supplying RAYCO Linter Cotton in wet-lap form, ready for the beaters.

RAYCO Pulp is made from virgin, first cut, carefully graded linters, in a modernly equipped plant, operated under scientific control standards. This advanced control system insures cotton pulp of the correct viscosity value for proper operation, pulp of maximum strength and high color—free of all contaminating impurities. Extreme care is taken to ship RAYCO Pulp in clean, tightly sealed cars, so it reaches the paper mill in perfect condition for the final beating operation—and the paper making machines are kept at peak production.

Send for the RAYCO Technical Data Sheet, and full information.

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RAYCO WET-LAP PULP

The Wandel Dino Pulper

The continuous preparation of paper stock from the many types of waste paper and raw pulp now on the market is of great importance to the mill operator so far as economy and continuous operation is concerned.

Today waste papers contain almost everything, string, wire, rags, metal parts and such innocent looking things as wet strength paper, paper laminated with insoluble binders and foil, paraffin treated papers, oil or asphalt, parchmentized papers and many other grades. This is a war condition and must be accepted.

With these conditions in mind Kurt Wandel, a consulting engineer of many years standing, and the Alfred Stauffer Machine Shops have developed the Wandel DinoPulper.

Mills not equipped for handling such waste papers do so with disastrous results.

Wet strength papers wind around beater rolls and cause shutdowns and breakage, while undissolved pieces get into the chests and cause trouble. Shrinkage is also high, and waste paper sometimes becomes more expensive than pulp. This discourages the use of waste in the mills.

A solution of these troubles is the use of the DinoPulper. Its construction and efficient action prevents tie ups. The two opposing Dino Heads, with their fine teeth, upon being fed waste paper start grinding. The more easily disintegrated papers become pulp and leave the DinoPulper through a rotary screen. This screen is entirely self cleaning and is readily accessible for any contingency. Papers not readily broken down stay in the DinoPulper until they break up or are removed. Heavy articles sink to the bottom into a well where they can be removed. Small lumps of undissolved paper in the discharged pulp may be broken down with a Claflin Refiner. Mill broke is handled in the same manner as outlined for waste paper. The big advantage lies in the fact that no beater bars are brought to bear on the fiber a second time. And the broke may be returned to the machine chests at once without taking capacity in the beaters. This reclaimed stock is then used in the same run from which it originally came.

In the case of raw fibers, any floating solid is held against the teeth until it is ground into fine particles.

36-Inch DinoPulper Ready for Field Testing

Kurt Wandel and Eight-Foot DinoPulper

The bundles of fibers return to the action of the teeth to be separated into their component parts. Yet there is no danger of injury to the fiber as there is never any cutting action in the DinoPulper.

The disintegrating action is rapid without hurting, in the least, the fiber length. An ideal set-up is the combination of a DinoPulper with a Claflin refiner for preliminary treatment of the stock which will then require only jordaning before it is placed on the paper machine.

Explains Soda Ash Situation

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 16, 1945—Direct military requirements for soda ash for May are not as great as anticipated, and all essential military requirements will be met, the Soda Ash Industry Advisory Committee reported at a recent meeting, the War Production Board announced today.

Lack of manpower, however, hampers the packaging of the chemical for important civilian requirements, and all packaged shipments are being delayed, they added.

The shortage of boxcars and hopper cars that confronted the industry a short time ago has cleared up, the committee said. Because of the critical car shortage at that time, it was necessary for WPB to request special preference to be given to the shipping of war requirements as a temporary emergency measure. Adequate transportation is now available at all plants, and prompt shipment of all but the package goods is expected.

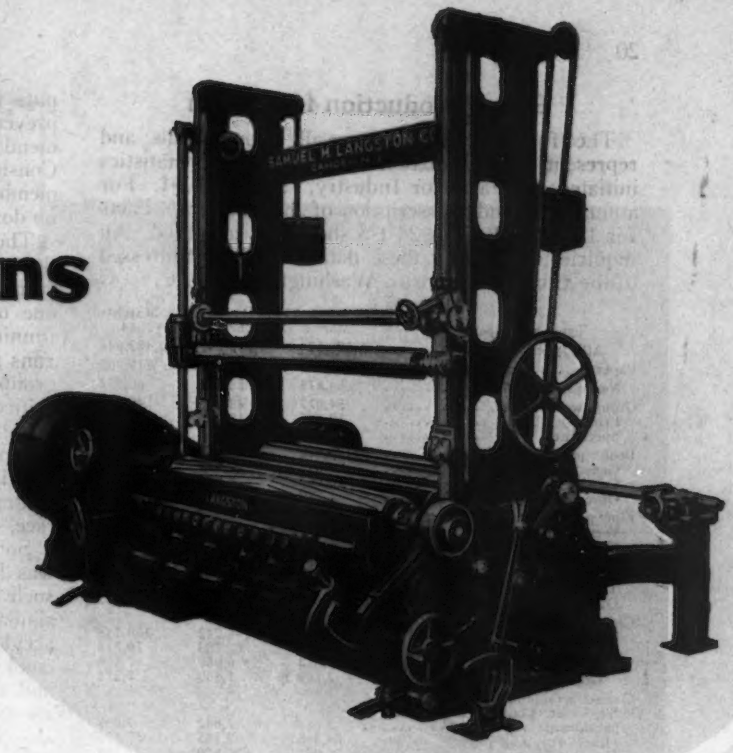
Asks Bids on Distinctive Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 14, 1945—The Secretary of the Treasury has announced that proposals are being invited for furnishing distinctive paper required for printing currency and public debt securities of the United States for the fiscal year 1946, for which bids will be opened at the Treasury Department on May 22.

The estimated quantity of paper required for currency is 113,865,000 sheets, or about 1375 tons, and for public debt securities 50,675,000 sheets, or about 958 tons.

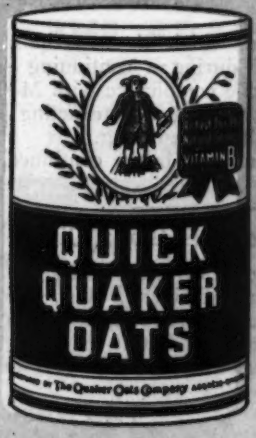
Successful Combinations



On the breakfast tables of America, "oatmeal-and-cream" has always been a popular team. The familiar Quaker Oats package that brings you this wholesome food is made with the help of a Langston "BA" Slitter and Roll Winder. Noted for the excellence of their products, The Quaker Oats Company, Chicago, find that Langston Slitters fully meet their exacting standards in the production of the package.

Wherever paper is processed; in the Mill, the Finishing Room, or the Converting Plant—Langston Slitters and Roll Winders assure dependable, trouble-free service.

SAMUEL M. LANGSTON COMPANY
CAMDEN, N. J.



Langston

SLITTERS AND ROLL WINDERS

Paper Production for March

The following data cover all known mills and represent a continuation of the monthly statistics initiated in "Facts for Industry," series 24-2-1. For annual data and a description of the statistics, "Facts for Industry," series 24-1-3 should be consulted. All inquiries concerning these data should be addressed to the Bureau of Census, Washington 25, D. C.

Type of paper	1945 March	1945 February[1]	March[1] 1944
All types	1,528,524	1,325,247	1,482,644
Paper	725,449	639,477	719,962
Newsprint	64,818	58,285	60,552
Groundwood paper	54,077	48,408	49,725
Printing	19,686	18,095	19,914
Specialties	34,391	30,313	29,811
Book paper	125,458	107,977	125,633
General printing	94,612	78,998	90,270
Converting paper	30,667	28,835	35,206
Other book paper	179	144	157
Fine paper	87,684	78,508	87,975
Writing paper[2]	66,971	59,359	64,991
Cover and text	4,558	3,700	5,076
Reproduction	4,611	4,034	4,547
Bristols[3]	6,329	6,804	7,833
Thin paper	5,150	4,581	5,083
Other fine paper	65	30	445
Coarse wrapping, converting and bag paper	169,868	148,242	170,738
Wrapping paper	75,692	62,703	70,715
Glassine	7,514	6,069	7,406
Greaseproof	2,169	1,809	2,275
Coarse wrapping, converting and bag paper (Continued) Vegetable parchment	2,623	2,642	3,059
Other wrapping paper	63,386	52,185	57,975
Bag paper	26,051	26,820	32,144
Converting paper	68,125	58,719	67,879
Multi-wall sack paper	32,215	29,649	31,709
Special industrial paper	20,093	19,438	20,309
Sanitary paper	70,743	64,798	70,278
Tissue paper	13,054	11,477	14,419
Absorbent paper	8,141	6,782	8,842
Building paper	79,298	65,913	79,682
Paperboard	803,075	685,770	762,682
Container board	368,334	321,483	347,660
Folding boxboard	192,761	165,882	183,452
Set-up boxboard	61,908	52,692	64,760
Cardboard	6,276	5,431	6,182
Building board	108,496	82,069	94,483
Miscellaneous board	65,300	58,213	66,145
Tube stock	45,688	39,173	43,562

[1]Revised.
[2]Includes Drawing, mechanical and detail and Protective and check.
[3]Includes Government postal card stock.

Accident Prevention in England

Purfleet, Essex, England,
March 27, 1945.

Editor, PAPER TRADE JOURNAL:—

We were interested in your article in the December 21st issue of the PAPER TRADE JOURNAL on accident prevention in the pulp and paper industry in your country, as accident prevention is a subject to which we in this company have devoted a considerable amount of thought and attention. You may possibly be interested to know our own record over the last two years. This is for a plant employing a total of about 3,000 operatives and working continuously three shifts seven days per week. The figures are as follows:—

	1943	1944
Frequency	19.9	20.4
Severity	1.6	2.8

While these figures are regarded as encouraging, having regard to the general level, we have not reached our goal which is nothing less than 100% safety.

We employ a whole-time safety engineer, who also has an assistant. His duties are comprehensive and cover every aspect of safety and safety propaganda.

We have a safety committee in the mill which meets monthly and discusses freely the cause of all the accidents that have occurred during the month, and puts forward suggestions as to ways and means of preventing a repetition. All suggestions and recommendations of previous meetings are also followed up. Considerable interest is taken in these talks, the members taking their duties very seriously. They are, no doubt, very resultful.

The propaganda is extensive and, in this connection, our publicity department co-operates. Apart from the usual posters which are continually changed, one of our principal means of propaganda is the running of an accident prevention competition, which runs for six-monthly periods. The mill is divided into groups and three safety cups and a shield are the subject of competition. Also, a personal award is made to each individual member of the winning group. The position of each group in the competition is daily shown on illuminated safety boards and also in graphical displays which take the form of a horse race, dog, or car race.

Some time back we decided to make a film which was based on the most common types of accidents such as falls, knocks, sprains, dropped objects and similar hazards. The film was shot in our works and accidents and near-accidents enacted by our own employees. The result has proved quite entertaining and aroused considerable interest. The film has been shown to all sections of the workers, and is shown also to groups of new employees. All new employees, of course, receive special accident prevention instructions in their early days at the mill.

It must be borne in mind that our present safety activities have a background of war and air raid hazards through which the plant has carried on continuously.

Yours truly,
THAMES BOARD MILLS, LTD.
M. H. Morley, Managing Director.

OPA Files Against Waste Dealers

Continuing with the waste paper enforcement drive, the Pittsburgh Office of Price Administration filed in the District Court of the United States for the Western District of Pennsylvania actions for injunctions and treble damages against four dealers, Daniel P. Woolley, Regional OPA Administrator has announced.

The defendants named and the amounts sought are as follows: Morris S. Barron, Mount Pleasant, Pa., $2,018; Caplan Iron and Steel Company, Jeannette, Pa., $2,753; Asher Shapiro, Louis Shapiro and Sam D. Shapiro, individually trading as Asher Shapiro and Sons, Pittsburgh, Pa., $6,076; and William Sklov and Elizabeth Sklov, individually and trading as Charlerioi Scrap Iron Company, Monessen, Pa., $3,855.

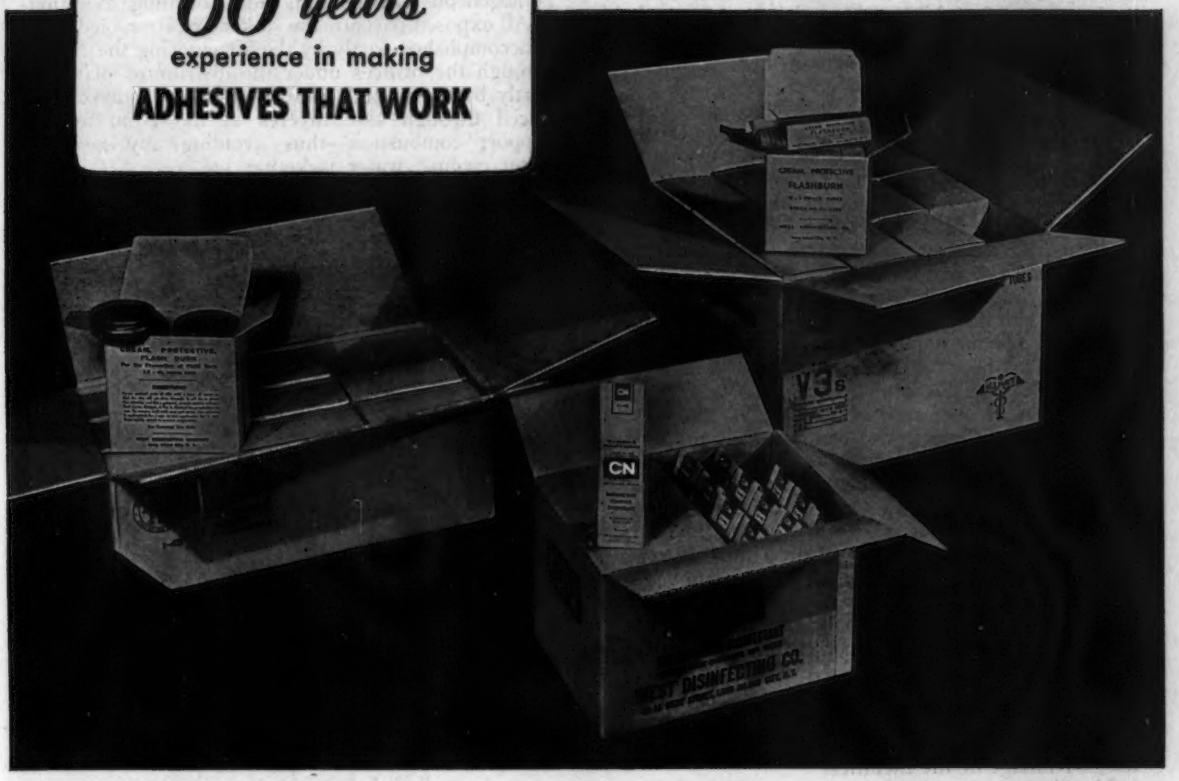
The violations upon which these actions were brought were revealed during a continuing survey by the OPA to determine compliance with MPR 30. The defendants were charged with exacting illegal loading charges, as well as upgrading.

Further investigations are being continued, Mr. Woolley announced.

First Boat Reaches Twin Cities

The steamer Wyandotte, carrying a cargo of 3,000 tons of coal, arrived at Marinette, Wis., April 20, being the season's first boat reaching the twin cities for the third time since 1942. It was six hours ahead of the E. L. Ford, loaded with 12,000 tons of coal,

60 years'
experience in making
ADHESIVES THAT WORK



"We wish to commend you for your special adhesive"

An important new war-product, *Protective Flashburn Cream,* helps prevent injuries due to flash burns. This cream, produced by West Disinfecting Company, manufacturers of "CN" and other products for the promotion of sanitation, must be securely safeguarded on its way over-seas.

The West Company writes: "We believe this product is one of the most important items developed during the war. It is packed for over-seas shipment in V-Cases necessitating the use of a water-resistant adhesive, which is a required part of Government specifications to which we must comply. We have found your special adhesive excellent for our purposes and wish to commend you for this excellent product."

Arabol takes pride in this evidence of ability to meet each manufacturer's particular requirements. This indicates why more than 10,000 adhesives formulas are on file in our laboratories—each one representing a determined effort to supply the exact adhesive for a specific requirement. Write for full information on Arabol V-Case and other Case Sealing Adhesives. See the Arabol Representative when he calls—he knows adhesives.

THE ARABOL MANUFACTURING CO.

Executive Offices: **110 East 42nd St., New York 17, N. Y.**

CHICAGO—54th Ave. & 18th Street • SAN FRANCISCO—30 Sterling Street

Branches in Principal Cities • Factories in Brooklyn, Cicero, San Francisco

Adhesives? . . . ARABOL!

SIXTY YEARS OF PIONEERING

Nursery in Envelope Plant

The International Envelope Company, Dayton, Ohio, producer for the government of all stamped envelopes used in the United States has established a play center for children located in one part of the main plant while the mother works in another part of the same building. This arrangement is said to be the first of its kind in the country.

Adoption of the program, conceived and carried into practice by A. G. Stone, general manager of the company, was made necessary due to the urgent need for additional women workers to meet the order demands of the plant, now one month behind schedule.

Many women, Mr. Stone stated, would like to work in industries necessary to the war effort, but cannot do so because of lack of facilities or personnel to care for their children while they are away.

It was with the belief that a play center for children located in the main plant, under proper supervision would solve the worker shortage to a great extent, that the idea was put into practice.

The plan of operation is simple, Mr. Stone said. Any mother wishing to work in the plant and having a child or children, ranging in age from 2 to 6 years, may take advantage of the facilities. The cost is 25 cents a day for each child, provided the parent puts in a full or designated work week. The center is to be opened each morning at 6:30 and will remain open until 5:45 P.M. One of the chief advantages of the play center in the plant is the fact that the mother is practically in the same building with her child and she need not get up any earlier to take her youngster or youngsters to a designated center, but can take him right to the plant with her.

Not only is the play center facilities to be opened to new workers, but present employees are invited to take advantage of the facilities.

Mr. Stone stressed the urgent need for additional workers by the fact that at the present time the plant is 280,000,000 envelopes behind schedule, or the equivalent of six weeks' production. The plant is equipped with sufficient facilities to meet such demands, but there is an acute shortage of workers. The plant employs about 450 workers, of which number 75% are women.

With a break in the weather and to care for youngsters during the summer season, Mr. Stone is making plans for conversion of a strip of ground, 65 by 175 feet, adjacent to the plant, into a children's playground. A six-foot fence is to be erected to enclose this entire area.

New Spreader Type Stoker

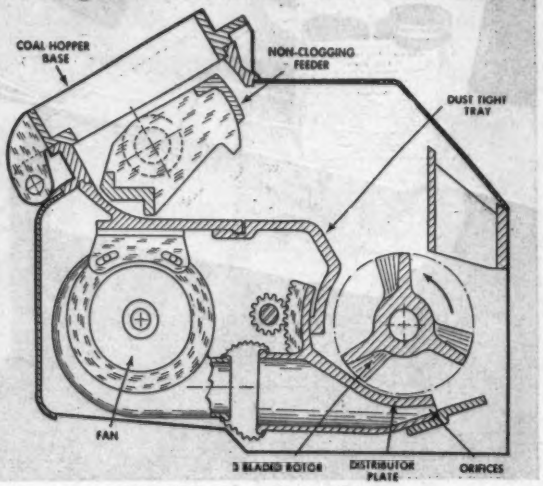
Newly introduced—the J & J Spreader Type Stoker offers many distinctive features said to increase the efficiency of combustion and assure long trouble-free operation.

One of these features shown in the accompanying diagram, is the sturdy, rugged, non-clogging and dust-tight coal feeder. It is adjustable for various operating conditions and is said positively to prevent any spillage of fines along the front of the stoker.

The efficient three bladed rotor receives the coal from the feeder tray and discharges it into the furnace off the end of the distributor plate—the position and slope of which are adjustable to meet the requirements of different size furnaces. A small high velocity fan mounted in back of the rotor, and discharging through orifices under the distributor plate, catches the fines and distributes these also to all parts of the furnace. This overcomes any tendency of the fines to drool down on to the furnace hearth, prevents any segregation of fines on the front grates, and lump on the rear grates, thus producing an even homogeneous fuel bed, and ideal burning conditions.

All exposed parts of the stoker are air-cooled. This is accomplished partly by the air entering the furnace through the orifices under the distributor plate, and partly by the secondary air from the windbox introduced through side tuyeres in the front arch to support combustion—thus avoiding any need for water cooling, water jacketing, etc.

The stoker unit is mounted on the cast iron front with four hinge pins, 2 on each side. Consequently, it is an easy matter to remove the 2 pins on one side, disconnect the drive belt, and swing the entire stoker to an angle of 90° with the front of the furnace,



J. & J. Spreader Type Stoker

permitting easy and quick inspection and ample working space in which to make any adjustments or replacements that may be indicated.

The stokers are furnished in four standard sizes—with 16, 20, 24 and 32 inch long rotors. They can be installed singly or as multiple units to meet the requirements of boilers ranging from 75 horsepower upward.

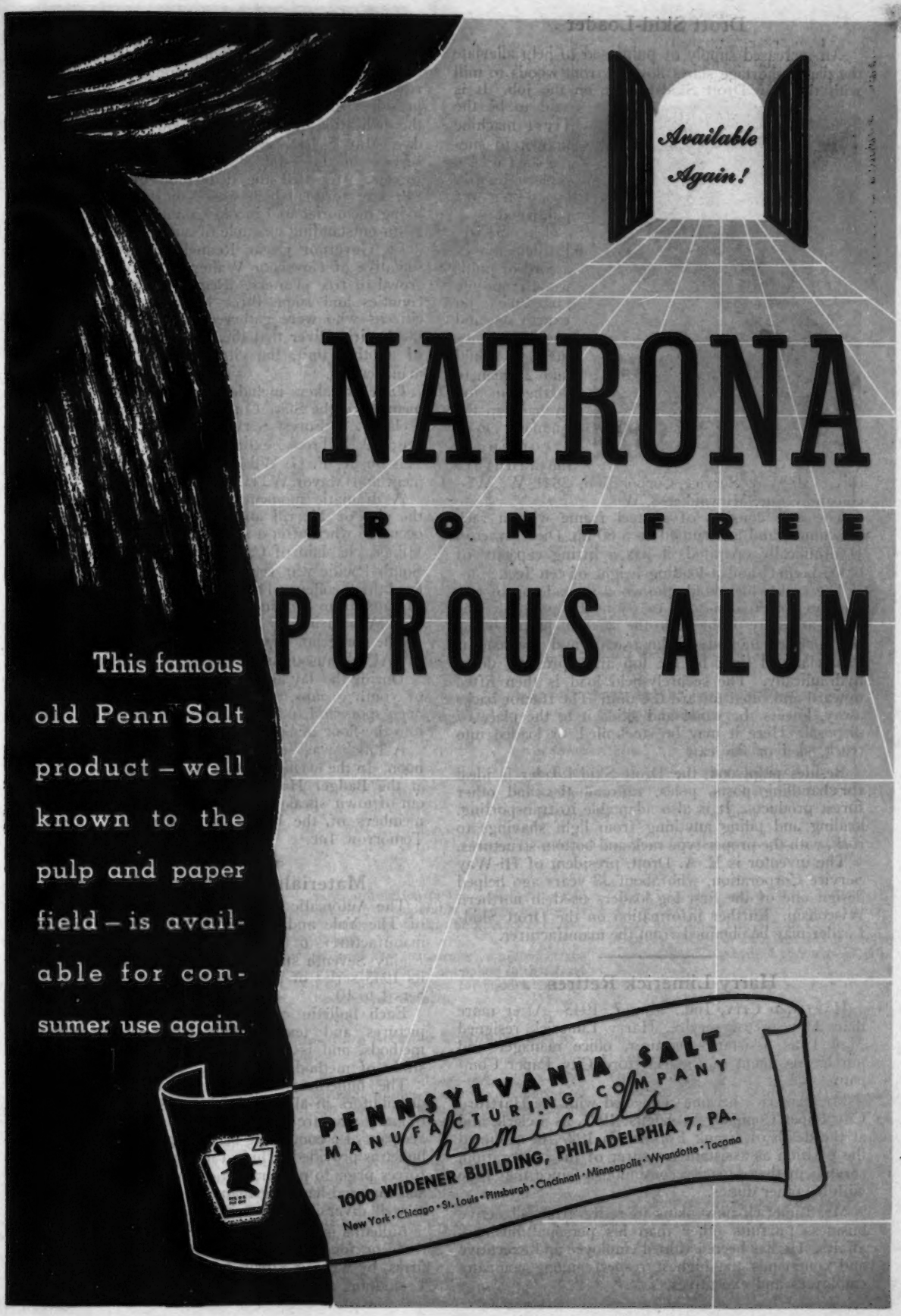
More complete details, including a fully descriptive bulletin may be had by writing to the Johnston & Jennings Company, 875 Addison Road, Cleveland, 14, Ohio.

Joins Mixing Equipment Co.

Mixing Equipment Company, Inc., of Rochester, N. Y., manufacturer of the well-known "Lightnin" and "Mixco" mixers and agitators, announce the addition of a new representative, George R. Mellema at 1024 Plymouth Building, Minneapolis 2, Minn. His territory will include Minnesota, North Dakota, South Dakota and the extreme Western section of Wisconsin.

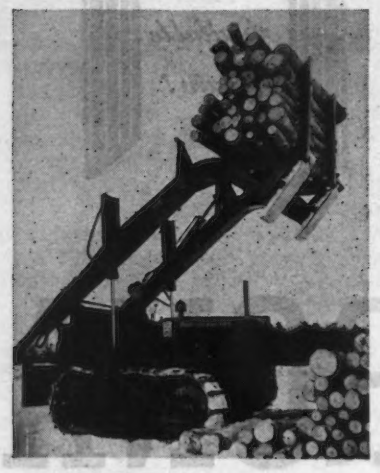
Mr. Mellema is a mechanical engineer—a graduate of Northwestern. For the past twelve years he has been a manufacturers' agent in the above territory and has specialized on heating and ventilating equipment, steam and mechanical specialties. Prior to operating as manufacturers' agent, he was employed as engineer by a Minnesota firm.

Mr. Mellema's services will be available to those in his territory who need aid on problems of mixing and agitation.


Available Again!
NATRONA
IRON-FREE
POROUS ALUM
This famous old Penn Salt product – well known to the pulp and paper field – is available for consumer use again.
PENNSYLVANIA SALT MANUFACTURING COMPANY
Chemicals
1000 WIDENER BUILDING, PHILADELPHIA 7, PA.
New York · Chicago · St. Louis · Pittsburgh · Cincinnati · Minneapolis · Wyandotte · Tacoma

Drott Skid-Loader

An increased supply of pulpwood to help alleviate the paper shortage starts flowing from woods to mill with the new Drott Skid-Loader on the job. It is said to be the first machine known to successfully replace hand-loading of pulpwood.



The Skid-Loader moves a cord of pulpwood from pile to truck in exactly one and one-half minutes. It would take 25 men to do the same job by hand in the same time, according to the manufacturer, Hi-Way Service Corporation, 3841 W. Wisconsin avenue, Milwaukee 8, Wis.

The unit consists of a steel frame with a rack attachment and is mounted on a 60 hp. Diesel tractor. Hydraulically operated, it has a lifting capacity of 6,000 pounds and a loading height of ten feet.

The rack which holds the wood is made up of two separate lower arms and two joined top arms. The lower arms are pushed into the stack of pulpwood by the forward motion of the tractor and the load is then clamped tight by the top arms pressing down hydraulically. The securely-held load is then lifted upward and tilted toward the unit. The tractor backs away, lowers the wood and skids it to the place of disposal. Here it may be stockpiled, or loaded into truck, sled or flat car.

Besides pulpwood, the Drott Skid-Loader is ideal for handling posts, poles, railroad ties and other forest products. It is also adaptable to transporting, loading and piling anything from light shavings to rock, with the proper type rack and bottom structures.

The inventor is E. A. Drott, president of Hi-Way Service Corporation, who about 38 years ago helped design one of the first log loaders used in northern Wisconsin. Further information on the Drott Skid-Loader may be obtained from the manufacturer.

Harry Limerick Retires

HARTFORD CITY, Ind., May 7, 1945—After more than 23 years of service, Harry Limerick resigned May 1 as assistant treasurer, office manager and purchasing agent of the Hartford City Paper Company.

Mr. Limerick became connected with the Hartford City Paper Company in August 1921, as a clerk, and at the death of Frank Forkner in 1927, he assumed the position as assistant treasurer of the corporation, serving in that capacity continuously since that time with his other duties.

Mr. Limerick now plans to retire from all active business pursuits other than his personal business affairs. He has been a valued employee and executive and commands the highest respect among company employees and executives.

Dedicates Merrill Forest Memorial

Pointing to the time when even twigs and branches of trees may be utilized by industry as technical research uncovers new uses for wood, Folke Becker, president of Trees for Tomorrow Inc., speaking at the dedication of the Merrill Memorial Forest Saturday, May 5, stressed the need for leadership and service in the establishment of community owned forests. He cited the dedication of Merrill's new 840 acre forest, which was dedicated as a perpetual living memorial to Lincoln County's military heroes, as an outstanding example of such leadership.

Lt. Governor Oscar Rennebohm, personal representative of Governor Walter T. Goodland, told the crowd of tree planters, delegations from neighboring counties and some three hundred Lincoln County citizens who were gathered on the scenic banks of the Prairie River that the occasion marked the entry of another unit, the city, into the field of forest management.

Other speakers included C. F. Smith newly elected member of the State Conservation Commission; Vico Isola, U. S. Forest Service Regional Office, Milwaukee; F. B. Trenk, extension forester, University of Wisconsin; F. G. Wilson, state conservation department and Mayor W. H. Au Buchon of Merrill.

A dramatic moment of the event, sponsored by the city of Merrill and Trees for Tomorrow Inc., occurred when after a short service by Captain H. W. Hilner, chaplain of Camp McCoy, a firing squad of South Pacific war veterans flanked by a color guard fired three volleys. This was followed by the sounding of taps from within the forest and the playing of "On Wisconsin," by the Merrill high school band.

The program was broadcast by radio stations WSAU, Wausau, and WFHR, Wisconsin Rapids.

During the day high school students, representatives of youth groups, and Merrill business men scapled open spots and tucked 9,000 white spruce transplants into the floor of the forest.

A lunch was served by Merrill manufacturers at noon. In the evening covers were laid for seventy-five at the Badger Hotel. The dinner was attended by out-of-town speakers, local committee chairmen and members of the board of directors of Trees for Tomorrow Inc.

Materials Handling Bulletins

The Automatic Transportation Company, Division of The Yale and Towne Manufacturing Company, manufacturers of electric industrial trucks, 101 West Eighty Seventh street, Chicago 20, is now preparing its 1945 series of materials handling bulletins, Numbers 1 to 10.

Each bulletin consists of four to six pages of pictures and text dealing with actual operating methods, and is based on plant interviews and the study of methods.

The bulletins are useful to manufacturers and distributors in all lines of business, and particularly to many who are planning post-war operations. They are part of a continuing series begun in 1941. Earlier bulletins provided technical information for the armed forces prior to preparation of their own warehousing and material-handling manuals. The new 1945 series is well diversified.

Bulletins in the new series will be sent periodically, three or four at a time, without charge, to business firms, by writing Edwin L. Bertram, Manager Sales Promotion, at the above address.

CONVERTIBLE FREE-VANE CONTROLLERS MEET YOUR AUTOMATIC CONTROL REQUIREMENTS

A Specific Instrument for Any One of Eight Variables:

- temperature
- flow
- liquid level
- pressure
- draft
- humidity
- pH value
- time

Convertible: Bristol's air-operated Free-Vane Controllers, available in the following types, each easily converted to another type simply by replacing one unit:

Monoset — for simple process-control applications where a valve is to be opened or closed with a small change in the value of the quantity under control.

Ampliset — has a variable throttling range, easily adjusted, and is used on continuous processes where the flow through the valve changes only a moderate amount in maintaining constant results.

Preset — throttling type, with a corrective action proportional to rate at which controlled variable is changing. Used mainly on batch processes having considerable lag, where starting up and shutting down occur frequently.

Reset — has throttling and automatic reset adjustments. For processes where transportation and transfer lags are large in relation to the capacity lag and where a considerable change in flow is required in maintaining constant conditions.

Magniset — the corrective action of the Preset mechanism is applied to the Reset Controller to correct for sudden and excessive load changes.

More Accurate Controlling Due to Bristol's "Free-Vane"

As the sensitive high-torque measuring element rotates under the activation of the change in value, a thin vane, floating between two opposing jets of air produces the throttling action to operate the control mechanism. Since the "Free-Vane" is frictionless, there is no retarding action on the measuring element — and recording is absolutely true. This is a Bristol patented feature, described in further detail in Bulletin A-112.

For a free copy, address THE BRISTOL COMPANY, 159 Bristol Road, Waterbury 91, Conn. The Bristol Company of Canada, Ltd., Toronto, Ontario. Bristol's Instrument Co., Ltd., London N.W. 10, England.

Engineers process control for better products and profits

AUTOMATIC CONTROLLING AND RECORDING INSTRUMENTS

Puts Containerboard on Urgency List

WASHINGTON, D. C., May 16, 1945—Containerboard, as defined under Order M-290, including solid and corrugated fiber sheets, used in the manufacture of fiber containers and boxes, has been placed on the National Production Urgency List, the War Production Board reported today. This means that manufacturers of this type of paperboard are entitled to the highest urgency ratings when seeking to replace labor losses or to increase the number of employees for additional production.

Besides containerboard, sulphate wood pulp, for which there is a current high demand in paper and paperboard production, container veneer and steel strapping were added to the Production Urgency List.

These products and materials are urgently needed to meet the increasing packaging demands of the Army, Navy and essential industries, according to Benton R. Cancell, director of the WPB Forest Products Bureau.

The inclusion of these items on the National Production Urgency List will enable manufacturers to seek and obtain higher urgency and priority ratings as well as higher manpower ceilings. This, in turn, will aid manufacturers materially in increasing the production of containerboard and certain other forest products sorely needed in the war effort, Mr. Cancell said. He also pointed out that it should prove effective in transferring a number of workers from non-war employment to critical war jobs.

The Forest Products Bureau, he added, is advising manufacturers and members of the industry affected by the additions to the Production Urgency List as to procedure in seeking additional employees and on related problems.

Stanley "Flud-Lite" Magnifier

The Stanley Electric Tool Division of The Stanley Works, New Britain, Conn. states that last week a practical use for its "Flud-Lite" magnifier was discovered for use in paper mills, etc.

The magnifier was mounted on a Seybold paper cutter so that the operator would follow measurements on the steel measuring tape more easily, set the machine more quickly and improve the accuracy of his work.

The "Flud-Lite" magnifier is a high quality magnifying glass, 5-inches in diameter. It is equipped with a fluorescent lamp, scientifically focussed to throw shadow-free light on the work.

A folder describing the device may be obtained from the manufacturer.

M. & O. Produces Sulphate Turpentine

Crude sulphate turpentine is now being produced at the Minnesota and Ontario Paper Company mill, it was announced by Clarence Larson, resident manager of the plant at International Falls, N. Y. Turpentine which separates from wood during cooking in the kraft digesters, formerly was wasted to the atmosphere in the gases released at the end of each cook.

The installation of special condensing equipment was completed recently to recover this turpentine. Production at the present time is about one tank car per month. The turpentine is accumulated in a large storage tank from which it is pumped to railroad tank cars.

APPROVES FORESTRY PROGRAM

(Continued from page 9)

its scope if undertaken to be determined by the people of each state.

8. Cooperate with public and private agencies in the control or abatement of major forest insects and diseases.
9. Develop more complete utilization of forest products."

Officers and Members of Council

Officers of the Council and members who represent the three industries are: General Chairman: P. H. Glatfelter, P. H. Glatfelter Company, Spring Grove, Pa.; Deputy Chairman: S. R. Black, Weyerhaeuser Sales Company, St. Paul, Minn.; Secretary: G. H. Collingwood, Chief Forester, National Lumber Manufacturers Association, 1319 - 18th street, N. W., Washington, D. C.

AMERICAN PAPER AND PULP ASSOCIATION: Sydney Ferguson, Mead Corporation, 230 Park avenue, New York; C. H. Sago, Kimberly-Clark Corporation, Neenah, Wis.; Alexander Calder, Union Bag and Paper Company, New York; *Ex-officio:* Earl W. Tinker, Secretary, American Paper and Pulp Association, 122 East 42nd street, New York.

AMERICAN PULPWOOD ASSOCIATION: C. O. Brown, International Paper Company, New York; Karl A. Swenning, Hollingsworth & Whitney Company, Boston, Mass.; *Ex-officio:* H. E. Brinckerhoff, Secretary, American Pulpwood Association, 220 East 42nd street, New York.

NATIONAL LUMBER MANUFACTURERS ASSOCIATION: George T. Gerlinger, Willamette Valley Lumber Company, Portland, Ore.; G. F. Jewett, Potlatch Forests, Inc., Coeur d'Alene, Idaho; Luther O. Griffith, Griffith Lumber Company, Huntington, W. Va.; M. L. Fleishel, Putnam Lumber Company, Shamrock, Fla.; C. C. Sheppard, Louisiana Central Lumber Company, Clarks, La.; *Ex-officio:* Henry Bahr, Acting Secretary, National Lumber Manufacturers Association, 1319 - 18th street, N.W., Washington, D. C.

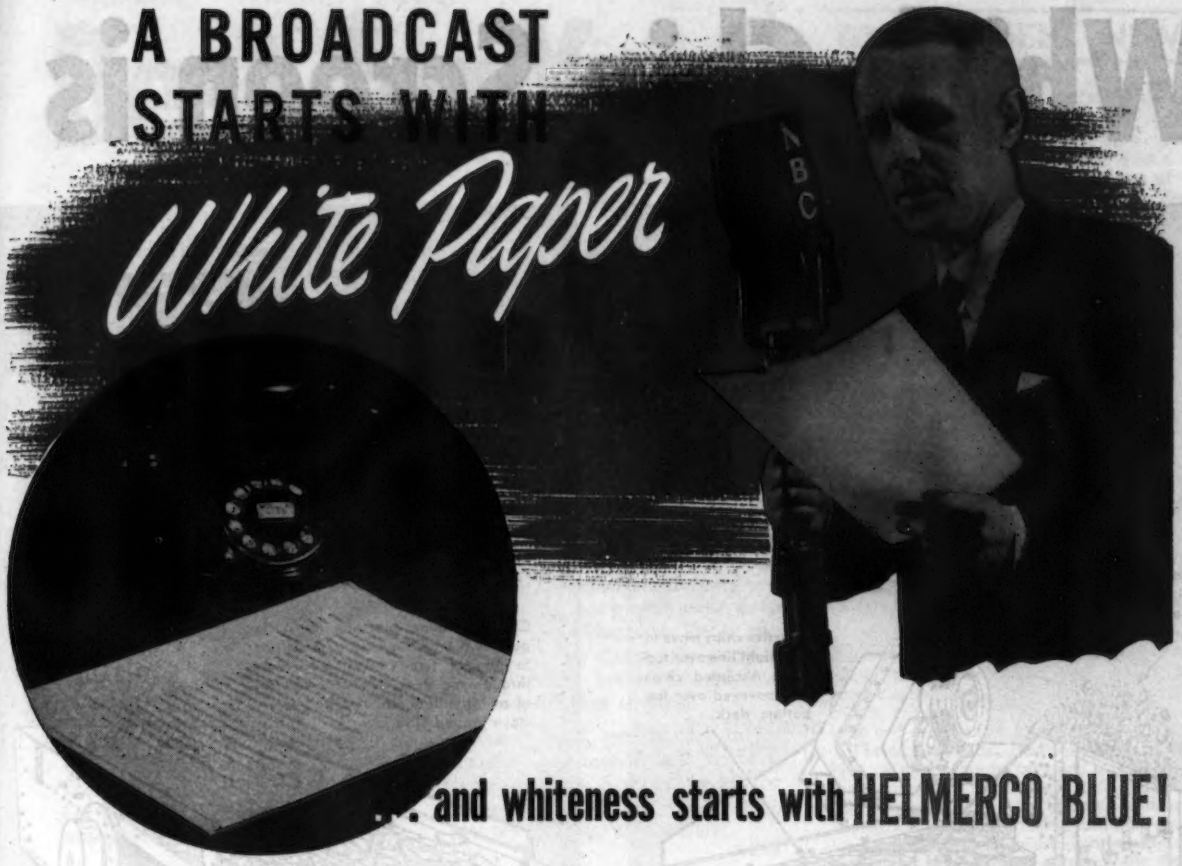
Michigan Div. Holds Ladies Night

KALAMAZOO, Mich., May 14, 1945—The Michigan Division of the American Pulp and Paper Mill Superintendents Association held its annual Ladies' Night Dinner Dance Saturday evening, May 5, at the Park American Hotel with one hundred thirty attending. A short program followed dinner after which Division Chairman Joe Waber introduced Jack Dickson of the R. T. Vanderbilt Company as toastmaster, who served very creditably in that capacity.

Communications from the following gentlemen, all expressing regret at their inability to attend were read: Ed Thoms of the Howard Smith Paper Company; Norman Wild, chairman of the affiliates committee to the association; Niles Anderson, Ollie W. Messner, Roy Knowlton, Stan Blankenship and John Cornell. Two past National Presidents accompanied by their wives, Roy Kelly and Grover Keith of the Marathon Paper Company were present and introduced, and also present were Past President Ed T. Coughlin, Bessie Merrithew of the Fritz Publications and Jack Williams of Edgar Brothers Company.

National President Ray L. Barton made a brief talk, expressing the hope that the association could hold a national convention in 1946.

A BROADCAST STARTS WITH *White Paper*



. . . and whiteness starts with HELMERCO BLUE!

The interesting group of tinting pigments known to papermakers everywhere as Helmerco Blues, brings high standards of excellence and blue-white perfection to today's white bonds, writing and other papers.

The Helmerco Blues are excellent performers in any furnish and are dependably uniform. They have outstanding brilliance, rapid dispersion and good lightfastness. Helmerco Blues alone or in conjunction with other fast-to-light colors are also useful in producing a wide range of fast-to-light specialty shades.

Whatever your paper dyeing problem today —or tomorrow—you'll find the H & M Technical Service Department's services available, ready to assist you in every possible way.

HELMERCO BLUES RANGE
From Reds to Greens

From 4 R W C Conc., the reddest blue to 5 G, the greenest shade, are the following in-between shades:

M 2 R Conc.	M G Conc.
M 2 R W Conc.	2 G B Conc.
M G W Conc.	M 2 G Conc.
M 4 G Conc.	

COLORS BY CALCO

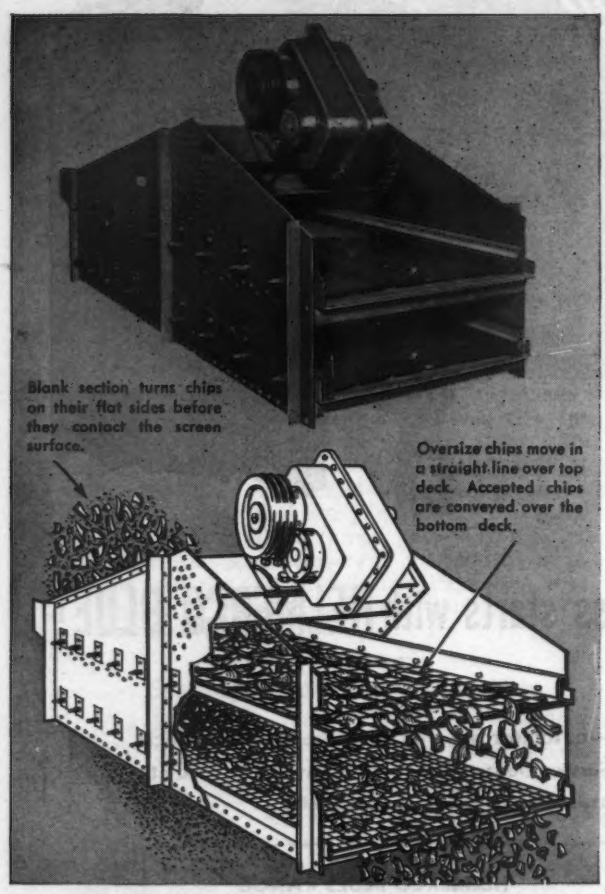
Heller & Merz Department

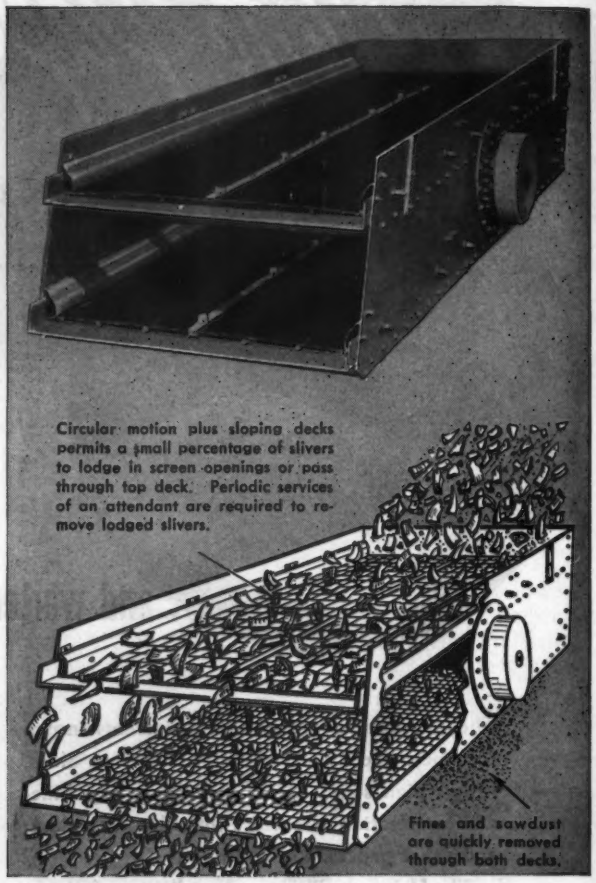
CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

Bound Brook, New Jersey

New York • Chicago • Philadelphia • Boston • Charlotte • Providence

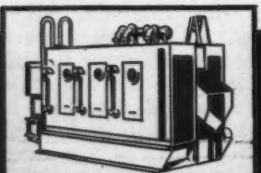
Which Chip Screen is


Blank section turns chips on their flat sides before they contact the screen surface.
Oversize chips move in a straight line over top deck. Accepted chips are conveyed over the bottom deck.

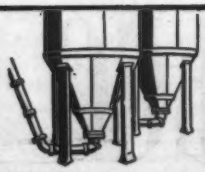

Circular motion plus sloping decks permits a small percentage of slivers to lodge in screen openings or pass through top deck. Periodic services of an attendant are required to remove lodged slivers.
Fines and sawdust are quickly removed through both decks.

1 THE LOW-HEAD CHIP SCREEN with its *horizontal* decks and 45° straight-line motion gives you the *highest percentage of uniform size chips.* Reason is that all chips are carried in a straight line — *on their sides*—with acceptable chips passing through, rejects and long slivers passing over, the top deck. Low-Head gives you *bigger capacity* than comparable size inclined screens, and *saves manpower* — practically eliminates need for attendant to remove slivers!

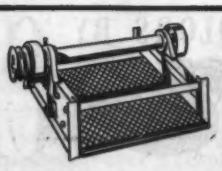
2 THE RIPL-FLO CHIP SCREEN with its 25° *inclined* decks and circular motion gives you an *average percentage of uniform size chips.* For many grades of pulp, Ripl-Flo is a good buy . . . for 3 principal reasons: 1) It does as good or better screening job than *any* inclined screen; 2) It is *lower in initial cost* than most comparable size screens; 3) Has *only 2 bearings* — takes less power, less maintenance than conventional 4-bearing screens!



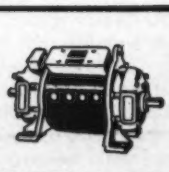
PREPARATION — Hydraulic Barkers, Chip Screens, Saws, Slashers, Interplane Grinders.



COOKING — Digesters, Blow Tanks, Kilns, Slakers, Heat Exchangers, Condensers.



WET ROOM — vibrating-type screens for use as Thickeners, for dewatering rejects.



PAPER-MAKING — special design Drives for Paper Machines, Rewinders, Calenders.

ALLIS CHALMERS

Best for You?

That depends on your particular needs! At Allis-Chalmers you can select from 2 different Screens—each designed to size a different quality of chips!

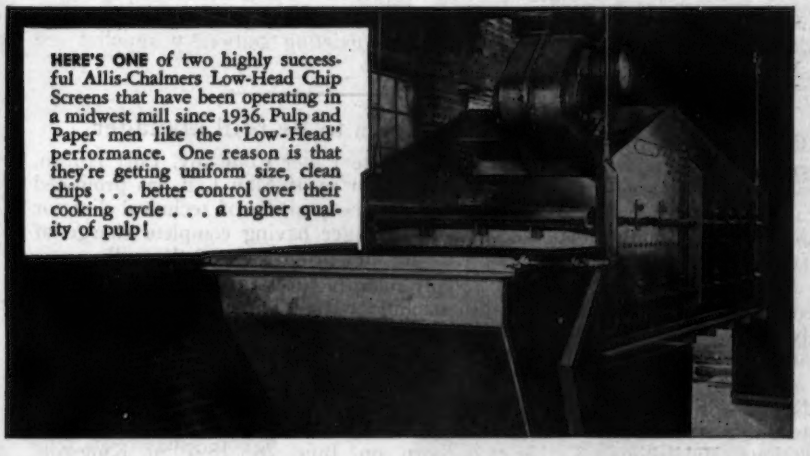
ALTHOUGH most operators agree they'll eventually standardize on *Vibrating-type* Chip Screens, they *don't* agree that *all* such screens will give them comparable results.

For *correct* selection depends on the *individual* mill . . . is based on such factors as: quality of pulp to be produced; type of chippers; available manpower, etc.

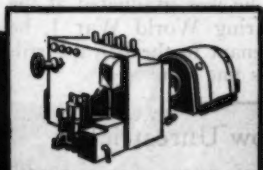
That's the reason A-C offers you 2 different types of vibrating Chip Screens . . . wants to know the *complete facts* about *your* particular operation before it makes a recommendation to you!

For helpful, preliminary information on selection and application of Chip Screens, send for Bulletin B6353. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN.

A 1851



HERE'S ONE of two highly successful Allis-Chalmers Low-Head Chip Screens that have been operating in a midwest mill since 1936. Pulp and Paper men like the "Low-Head" performance. One reason is that they're getting uniform size, clean chips . . . better control over their cooking cycle . . . a higher quality of pulp!



POWER — all types of Power Generation, Distribution and Control Equipment.

MOTORS & CONTROLS — all types a-c and d-c Motors, ½ to 7000 hp — Gearmotors.

TEXROPE V-BELT DRIVES — fractional to 5000 hp — Constant and Adjustable speed.

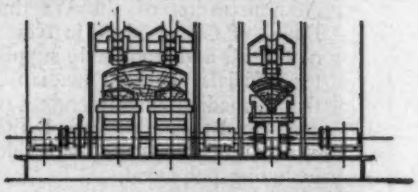
PUMPS — Single & Multi-Stage, 10 to 150,000 gpm — Paper Stock Pumps, Fan Pumps.

MILWAUKEE 1, WIS.

DEVELOPMENT NEWS

THE REVOLUTIONARY PROGRESS being made by the A-C Streambarker, first commercially developed hydraulic barker for pulpwood sticks 4 to 18 inches in diameter, 4 to 8 feet in length, has led to the development of two new Streambarker units—(1) A large Round Log Barker for handling logs 18 to 40 inches in diameter, 16 to 30 feet in length; and (2) A Hydraulic Slab and Edging Barker.

Similar in principle and operation to the original Streambarker, the new units promise: *Complete elimination of brooming losses;* Important *savings in manpower; Lower initial and installation cost* than other types of barking equipment; Valuable mill *space savings;* and a *higher quality end-product.*



This cross-section plan shows how both slabs and quarter-logs will pass through one machine.

STREAMBARKER ROUND LOG BARKER. Water, at 650 lbs pressure, removes bark by erosive action as log is revolved on 4 automatic rollers, and propelled by a carriage which moves back and forth below high pressure water jets.

The carriage is designed to both load and unload at special ramps provided at each end of the barking chamber. When carriage is at one end of travel, automatic lifter arms raise the barked log free of the rollers and onto the unloading ramp. The arms are then in position to receive a rough log and automatically drop it into the crotch of the rollers, which begin rotating the log toward the other end.

One operator, viewing through shatter-proof glass, controls progress of the log. Depending on its diameter, shape and species, he can adjust both height of water nozzles and movement of carriage to assure thorough barking action.

STREAMBARKER SLAB AND EDGING BARKER. Slabs are conveyed through Streambarker on spur-equipped variable speed bed chains. A series of special, spring-controlled, hinged baffle plates holds slabs in position while barking action takes place.

Three oscillating nozzles, operating at 90° to length of slab, are adjustable for length of stroke and speed—assure full coverage of bark surface.

Edgings are fed, 1 or 2 at a time, through a separate channel running the length of the machine.

For further information on A-C Streambarkers, contact our nearby district office, or write to ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS.

♪ *Tune in the famous Boston "Pops", Blue Network, Saturdays at 8:30 pm, EWT.*

Expect More Canadian Pulp

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 16, 1945—Estimates of Canadian officials confirm previously announced expectations that increased pulpwood supplies will permit an over-all increase of between 5% and 6% in Canadian production of pulp and paper commencing with the third quarter, War Production Board Printing and Publishing Officials said today. These estimates are subject to further examination and consultation with Canadian manufacturers, it was explained. However, final allocation of Canadian newsprint and pulp for the third quarter will be available to WPB before May 31.

At a recent meeting of WPB Forest Products Bureau officials with the Canadian Pulp and Paper Administration of the Wartime Prices and Trade Board of Canada, held in New York City, to discuss newsprint and wood pulp supplies for the third quarter, officials of the Canadian Administration stated that Canadian manufacturers will produce all they can, consistent with such limitations as may prevail at the mills respecting available labor and materials, including pulpwood.

Ordering of newsprint by United States consumers and Government agencies in excess of the available total supply is expected to result in a cumulative carry-over into the third quarter of deferred newsprint orders for more than 50,000 tons against United States and Canadian mills. A meeting of the special task committee of the Newspaper Industry Advisory Committee will be called immediately to consider problems arising out of the over-ordering, WPB stated.

Two L. A. Paper Dealers Sued

Treble damages aggregating $16,018.71 were sought by OPA last week in Superior Court suits against two Los Angeles paper dealers, H. M. Geier Specialty Company, 1045 Mignonette street, and Nathaniel L. Levenson, 1052 Sentinel avenue.

According to Arthur Lasher, OPA enforcement attorney, the complaint against Geier alleges wholesale and retail sales of wrapping paper at an overcharge of $3,469.07. The government agency is seeking judgement for three times that amount or $10,407.21.

The alleged violations occurred from May 19, 1944 to April 30, last.

The second suit charges Levenson with similar violations affecting retail sales only, during the first four months of the present year, and asks for treble damages of $5,611.50.

Coupled with this suit is OPA's plea for a court order restraining defendant from making certain sales until he complies with OPA regulations establishing the maximum prices for certain papers.

CIO Wins at Michigan Paper Plant

The Paper Workers Organizing Committee-CIO won the bargaining rights for the employees of the Michigan Paper Company of Plainwell as the result of an N.L.R.B. election.

PWOC-CIO Representative Neil Chesebro and Charles Mitchell were in charge of the organizing campaign. Local 1062 has been chartered as the PWOC-CIO affiliate representing the employees of the Michigan Paper Company mill. Contract negotiations have begun.

TAPPI and Superintendents to Meet

The New England Section of the Technical Association of the Pulp and Paper Industry and the Connecticut Valley Division of the Superintendents Association will meet at the Norwich Inn, Norwich, Conn. on May 25-26, 1945.

There will be visits to the Robertson Paper Box Company mill at Montville and the Inland Paper Board Company mill at Versailles, Conn., on Friday afternoon. In the evening New England TAPPI will hold its annual meeting and election of officers. This will be followed by a paper by E. S. Chase of Metcalf & Eddy on "Stream Pollution With Special Reference to Paper Mill Waste."

On Saturday morning L. E. Smith of the Downington Manufacturing Company will describe the "No-Foam Approach Flow System" and will show a motion picture on post-war paper machinery.

There will be a golf tournament in the afternoon followed by a dinner and dance in the evening.

Westinghouse Changes Name

The corporate name, "Westinghouse Electric and Manufacturing Company" was changed on May 12, 1945 to the Westinghouse Electric Corporation. The corporation states that the change in name has been under consideration for several years. The former full name, "Westinghouse Electric and Manufacturing Company," was long and unwieldy. For the sake of simplicity and brevity, the board of directors some time ago recommended a change to "Westinghouse Electric Corporation." When the stock reclassification made it necessary to print new stock certificates, it seemed appropriate to adopt the new name at the same time. However, in order to conserve paper, the name change on most company printed forms will be made gradually, as existing stationery supplies are exhausted.

H. G. Wales to Be Mill Manager

The Dunn Sulphite Paper Company, Port Huron, Mich., announces that as of May 1, it has promoted H. G. Wales from the position of technical director to that of mill manager having complete charge of all manufacturing and production of the mill.

The company manufactures high grade specialties, principally machine coated waxing, foil mounting, and special papers for fine creping. Mr. Wales joined the company in May, 1929, having come from the Brompton Pulp and Paper Company where he served in their operating departments. He also served Abitibi and the Howard Smith Companies.

He was born on June 28, 1897 in Kingston, Jamaica, B. W. I. In 1923 he was graduated at the University of Toronto. During World War I, he served in France as a Lieutenant in the Royal Artillery. He is married and has one son.

Mill Machinery Now Unrestricted

Restrictions on the manufacture of paper mill machinery and parts and wire cloth used in the manufacture of pulp, paper and paperboard were removed by WPB, with the revocation of General Limitation Order L-83, controlling the delivery and acceptance of paper mill machinery, and L-209, controlling wire cloth for mill use.

Impco fits into your Bleachery plans

YOU WANT:	WE HAVE:
Flexibility	"BUILDING BLOCK" BLEACHERY UNITS —readily combine batch and continuous, low or high density
Steam Economy	HIGH DENSITY BLEACHERS —less water to heat per ton of stock
Easy Operation	"FLOOR MOUNTED" WASHERS —control from one operating floor
Low Chemical Usage	MIXERS —for most effective chemical use
Least Shrinkage	ECONOMICAL MULTI-STAGE DESIGNS
Fresh Water Savings	BALANCED FILTRATE RE-USE

Let us work with you for superior bleaching at lower installed and operating costs

IMPCO

Improved **PAPER MACHINERY CORPORATION**

NASHUA, NEW HAMPSHIRE

Col. Johnston Joins Sutherland

Sutherland Refiner Limited announce the appointment of Colonel H. Wyatt Johnston, E.D. as its Canadian representative, with his office at 319 Drum mond Building, Montreal.

Colonel Johnston is widely known both in the pulp and paper industry and in military circles. Born in Montreal, he was educated at Lower Canada College and McGill University. In 1921 he graduated with honors in chemical engineering and in 1929 he received a Ph.D. for a thesis on penetration of wood by cooking liquors. He joined the Pulp and Paper Division of the Forest Products Laboratories of Canada in Montreal, becoming officer-in-charge of the Division in 1935. In 1940 he was placed on active service and on his return to civilian life in 1944 he

COL. H. WYATT JOHNSTON

rejoined the Pulp and Paper Research Institute of Canada as a research associate. In the course of his association with the Institute, he conducted a number of investigations.

Colonel Johnston served in France with the Canadian Engineers during the Great War. On demobilization he retained his interest in military affairs and joined the 17th Duke of York's Royal Canadian Hussars, becoming commanding officer in 1932. In 1936 he was promoted to be Colonel commanding the 3rd Cavalry Brigade and in 1937 took the Advanced Course for N.P.A.M. officers at R.M.C. Kingston. In July 1940 he was placed on active service with the Canadian Army and helped Major-Gen. J. B. White, C.B.E., D.S.O. to raise the Canadian Forestry Corps. In September 1940 he became General Staff Officer, 2nd Grade and Canadian Armoured Corps representative in Montreal. In April, 1943 he went to Camp Borden, Ont. as G.S.O. 1 and on 1st March 1944 he returned to civilian life.

L. L. Brown Moves New York Office

The New York City office of the L. L. Brown Paper Company, Adams, Mass., has been changed from 261 Broadway to 41 Park Row 7, room 707, telephone Cortlandt 7-1335. It is in charge of E. C. Chadwick, as formerly.

The Wastepaper Industry

"The Wastepaper Industry," the first known treatise on the complex operations of collection, sorting, distribution, and consumption of wastepaper, will be available about April 1, it is announced by Board Products Publishing Company.

This book, by Harry J. Bettendorf, vice president of Board Products Publishing Company, will describe the available supply of wastepaper, where it comes from, how it is handled and sorted, the various grades of wastepaper, and where and for what products wastepaper is consumed. The book tells the tremendous importance of wastepaper as a raw material for paperboard and for paperboard boxes. The complex market picture, the facilities necessary for collection, and the limits on the quantities which may economically be salvaged are described.

The booklets may be obtained from Board Products Publishing Company, 228 N. LaSalle street, Chicago 1, Ill. Price, $1.50 domestic; $1.75 foreign.

Announces Improved Chlorinated Lime

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 14, 1945—One of the results of wartime demands is seen in the announcement just made by the Pennsylvania Salt Manufacturing Company of its Quaker Improved Chlorinated Lime. New methods of manufacturing and improved methods of controlling the manufacture of chlorinated lime have resulted in the material having better stability characteristics, more uniformity and a lower moisture content. This material conforms to Chemical Warfare Service Specifications No. 197-54-281B, Grade II. Because of its improved stability, users are assured of more consistent results.

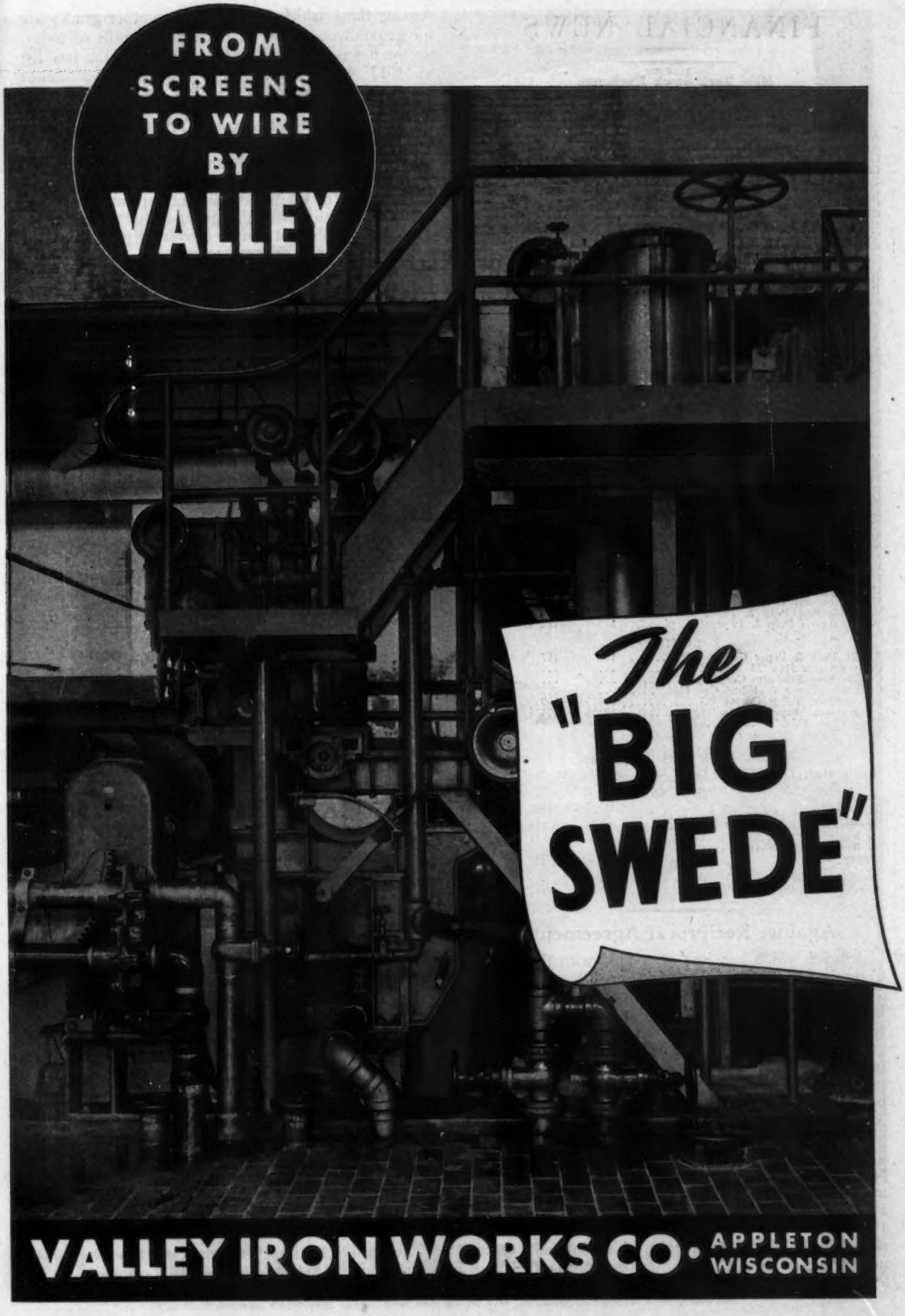
While Quaker Improved Chlorinated Lime was developed as a war product and is still in considerable demand for military uses, the company states that this material is also available for civilian use. Information may be secured by writing to Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia, 7, Pa.

Select Wausau as "Test Community"

WAUSAU, Wis., has been selected as one of several "test communities" in the state by the Wisconsin Committee for Economic Development in an effort to determine the extent of post-war building and construction, D. C. Everest, president and general manager of Marathon Corporation, Rothschild, Wis., and chairman of the Wausau OED committee, was informed last week in a letter from R. J. Colbert, Madison, Wis., manager of the state committee. The letter said that the American Society of Civil Engineering was working out details for the post-war building survey.

Rust Prevention

Bulletin No. R-181, just issued by the Johnston & Jennings Company, 864 Addison road, Cleveland 14, Ohio, describes Rusta Restor, the cathodic, i.e. electrical, method that prevents rusting of steel water tanks, piping, and other steel structures. The bulletin illustrates the action with simple, easy to understand experiments, describes the equipment, includes a table of comparative costs, etc. No obligation.


FROM
SCREENS
TO WIRE
BY
VALLEY
The
"BIG
SWEDE"
VALLEY IRON WORKS CO. APPLETON WISCONSIN

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending May 12, 1945

STOCKS	High	Low	Last
A. P. W.	4⅜	4½	4⅜
Armstrong Cork Co.	49½	48	49⅛
Celotex Corp.	18¼	17⅛	17⅝
Celotex Corp., pf.	20¾	20⅜	20¼
Certain-Teed Products Corp.	11⅜	10¾	11
Certain-Teed Products Corp., pf.	153½	151	153
Champion Paper & Fibre Co.	34⅜	32½	33⅝
Champion Paper & Fibre Co., pf.	112½	112	112¼
Congoleum Nairn Co.	33½	30½	30½
Container Corp. of America	29¼	28	28
Continental-Diamond Fibre Co.	12⅛	11⅝	12⅛
Crown-Zellerbach Co.	23⅜	22⅜	23½
Crown-Zellerbach Co., pf.	104¾	102¾	104
Dixie Cup Co.	25	23	24¾
Dixie Cup Co.—A.	48½	48	48½
Flintkote Co.	33⅜	30⅞	32
Flintkote Co., pf.	...	...	...
Robert Gair	6	5⅜	5⅜
Robert Gair, pf.	17½	17	17⅛
International Paper Co.	27⅜	25	26¾
International Paper Co., pf.	92⅜	90¾	92
Johns-Manville Corp.	118	112¾	115
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	45	44¼	45
Mac Andrews & Forbes	32½	32¼	32½
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	47½	45¼	46⅝
Mead Corp.	14⅝	13⅞	14⅜
Mead Corp., pf. A—6%	101¼	101¼	101¼
Mead Corp., pf. B—5½%	98¼	98¼	98¾
National Container Corp.	16⅜	15½	16⅜
Paraffine Companies, Inc.	66	66	66
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	18⅝	17½	17¾
Rayonier, Inc., pf.	36¼	35⅝	35⅝
Ruberoid Co.	39	37	37
Scott Paper Co.	48¾	47	47¼
Scott Paper Co., pf.	108¾	108¾	108¾
Sutherland Paper Co.	33	32	32
Union Bag & Paper Corp.	17	15¾	16¼
United Paperboard Co.	7⅜	7⅜	7⅜
U. S. Gypsum Co.	88½	84½	85
U. S. Gypsum Co., pf.	190	190	190
West Virginia Pulp & Paper Co.	25½	23¾	25½
West Virginia Pulp & Paper Co., pf.	111	110½	111
BONDS			
Abitibi Pulp & Paper Co. 5s '53	108	107	107⅝
Celotex Corp. 3¾s '55	...	...	...
Certain-Teed Products Corp. 5½s '48	...	...	...
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	109½	109	109½
International Paper Co. 5s '47	104½	104¼	104½
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending May 12, 1945

STOCKS	High	Low	Last
Great Northern Paper Co.	37¼	37	37¼
Hummel-Ross Fibre Corp.	7⅝	7½	7½
St. Regis Paper Co.	6⅞	5¾	5¾
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	6¼	5¾	5¾
BONDS			
American Writing Paper Co. 6s '61	102¾	102½	102¾

Against Reciprocal Agreements

A brief which has just been filed with the House Committee conducting hearings on the Reciprocal Trade Agreement, now pending before Congress on behalf of the Groundwood Paper Manufacturers, stated that the enactment of this Act might wipe out groundwood paper manufacturing, a basic American industry producing about 600,000 tons of paper a year, employing in normal times approximately 7,000 people with an annual pay roll of $10,500,000, and with 32 mills located in 10 states, valued at approximately $75,000,000.

In support of this statement, the brief stated in part: "Most of the mills in the groundwood paper manufacturing industry used to be newsprint mills. Prior to the placing of newsprint on the free list in 1913, there were seventy United States mills making newsprint. Today, only eight of those mills make newsprint. The rest have either been dismantled, are idle or have shifted to the production of other grades. Among those which have shifted to other grades are the groundwood paper manufacturing mills of today. So the net result of placing newsprint on the free list in 1913 was to make the United States almost completely dependent upon foreign mills for this essential commodity. If a further cut is made under the authority of the Reciprocal Trade Agreement and the present groundwood mills are forced to discontinue operations or shift to the manufacture of higher grades of paper, there will be no American industry left, capable of manufacturing newsprint for American consumption; because groundwood mills are the only paper mills that can be converted to such manufacture in case of an emergency.

A brief also has just been presented to the House Committee conducting hearings on the Reciprocal Trade Agreements Act now pending before Congress, on behalf of the kraft wrapping paper industry, stating that this Act threatens the welfare of an industry whose annual sales approximate $150,000,000.

In support, at table of imports was presented to the Committee, showing that because of the reduction in duty, the imports of foreign kraft had increased from 3,616 tons in 1932 to 24,083 tons in 1936.

J. H. Hinman Appointed Chairman

All the Manhattan industrial firms intended to buy $1,000,000,000 in War Bonds during the Seventh War Loan. J. H. Hinman, president of the International Paper Company, is chairman and F. A. Auffermann is co-chairman of the paper unit of the 21 major industries which constitute the subdivision of the industry section.

Crown Zellerbach Pays Loan

The Crown Zellerbach Corporation has paid off the last $1,500,000 of its bank loans, freeing itself of debt to the banks for the first time since the merger with the Crown Willamette Paper Company in 1928. Since 1931 the corporation has liquidated a combined bond and loan debt which then was $40,500,000.

Albemarle Nets $6.59

The Albemarle Paper Manufacturing Company for the year to March 31 reports a net income of $125,636, or $6.59 a common share, against $134,787, or $7.56 a share, for previous fiscal year; net sales $5,117,875, against $4,576,955.

Gaylord Earns 37 Cents

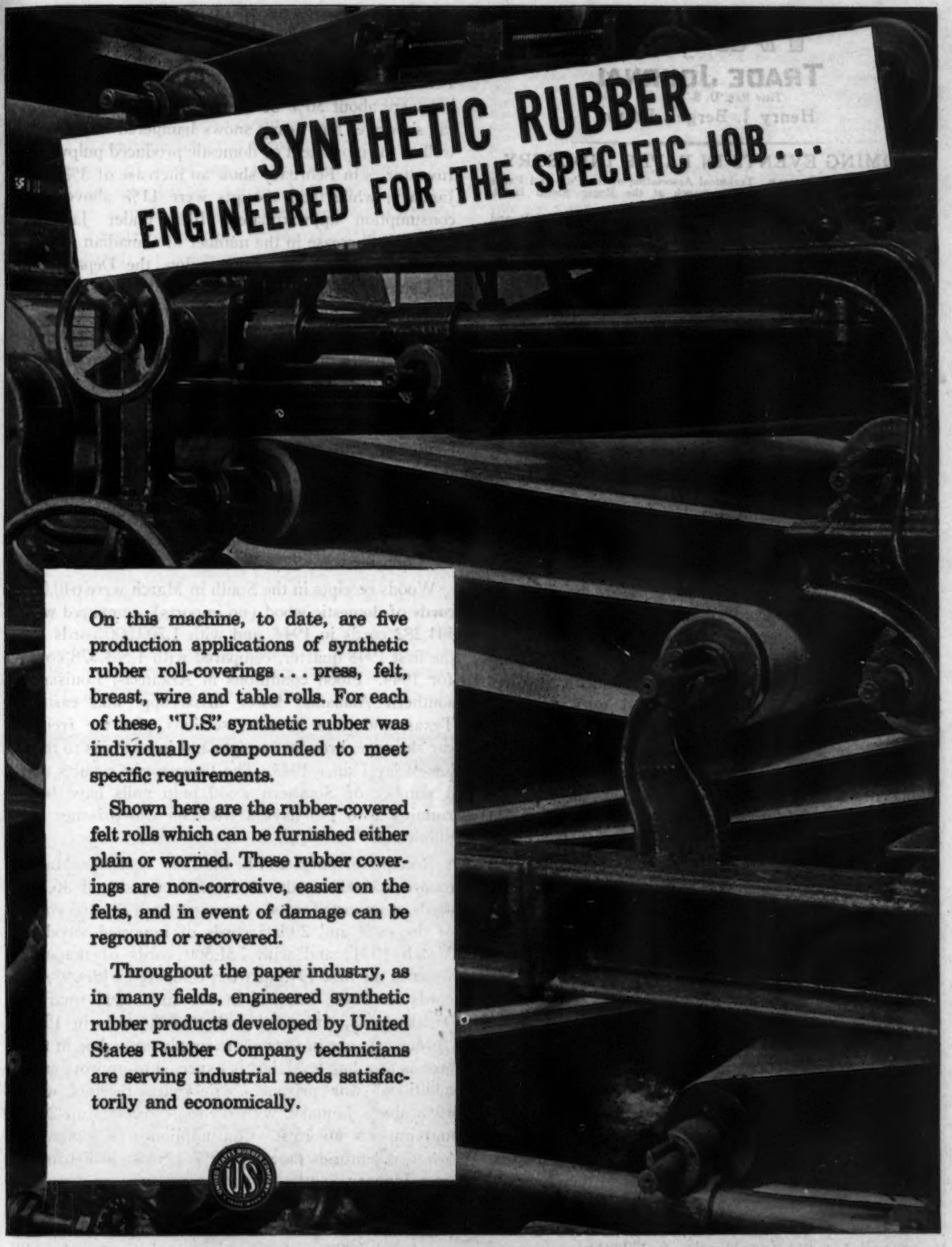
The Gaylord Container Corporation and subsidiaries for the March quarter reports a net profit of $262,364, equal to 37 cents each on 542,821 common shares, against $268,799, or 38 cents each on 539,221 common shares last year.

Continental-Diamond Profits Up

The Continental Diamond Fibre Company and wholly-owned domestic subsidiaries for the March quarter reports a net income of $106,593, compared with $83,878 last year; total sales, $3,382,402, against $3,036,462.

Amer. Paper Goods Profits Off

The American Paper Goods Company for 1944: Net income, $134,586, or $4.24 a common share, against $171,088, or $5.45 a share, the year before.



On this machine, to date, are five production applications of synthetic rubber roll-coverings . . . press, felt, breast, wire and table rolls. For each of these, "U.S." synthetic rubber was individually compounded to meet specific requirements.

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PAPER
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Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

PULPWOOD SUPPLY CRITICAL

Pulpwood production has for some time been on the urgency list of essential materials. The prospect at this date is not as favorable as expected and no substantial improvement is looked for until the two major problems — freight car shortages and an improvement in the deteriorating motor truck situation can be effected. The railroads are handling an unprecedentedly heavy traffic and the shortage of cars is likely to remain throughout the year. The low rate of motor truck production and the dwindling supply of available trucks in use, is difficult to solve. More new trucks are needed and until available the short pulpwood supply situation can only be partially met with existing schedules of production and the fullest use and conservation made of the inadequate number of motor trucks on hand.

Pulpwood receipts for the month of March totaled 1,486,200 cords and were about 2.50% below 1944. Receipts for the first quarter of 1945, aggregating 4,132,200 cords, were 6% below the first quarter of 1944. The War Activities Committee of the Pulpwood Consuming Industries, also reports that imports for March were 115,000 cords, and for the first 1945 quarter, 324,800 cords, which were the lowest in the last five years and approximately 23% below 1944. Domestic receipts of pulpwood in March, 1945, were, however, 1,374,700 cords, or about the same as in 1944 and higher than in the years, 1943, 1942 and 1941. Domestic receipts for the first 1945 quarter totaling 3,807,400 cords, were 4% below 1944.

Northeast receipts of domestic harvested pulpwood in February were 7.7% below February, 1944, while receipts of imported wood were 6.1% lower. Receipts for March, 1945, aggregated 204,700 cords of domestic wood, and 67,900 cords of imported wood. The over-all receipts for March of 272,600 cords were 1% below March, 1944; and for the first 1945 quarter, totaled 787,500 cords, or 4% below the first 1944 quarter. Imports in March were 3% below 1944, and imports for the first 1945 quarter declined to 194,000 cords, a decrease of 37%. March receipts were 23% above 1944, however, and 16% higher for the first 1945 quarter above the like period in 1944. In February, 1945, imports rose 20% above January, but were about 50% of the normal receipts. Freight car shortages and heavy snows hampered imports, as well as the movement of domestic produced pulpwood. Inventories in February show an increase of 3% over January, while total receipts were 11% above, and consumption approximately 10% under January, 1945. No increase in the number of Canadian woodsmen, 5,060, working in the region, the Department of Commerce reports, is expected until the fall when possibly new quotas may be agreed upon.

Appalachian receipts of wood of domestic production in March totaled 119,000 cords, compared with 122,608 cords in 1944; with 276,000 cords for the first 1945 quarter, compared with 352,189 cords in 1944, and with imports of 300 cords in March, 1945, compared with 100 cords in 1944; and 4,500 cords for the first 1945 quarter, compared with 300 cords for 1944. Inventories at the end of February dropped to the lowest level during the war, due to the worst weather conditions in 58 years. Receipts for the first 1945 quarter were 22% below 1944.

Woods receipts in the South in March were 640,000 cords of domestic wood (no imports), compared with 541,282 cords in 1944, and with 1,709,900 cords for the first 1945 quarter, compared with 1,561,378 cords for 1944. Flood conditions in Arkansas, Louisiana, southern Alabama, lower Mississippi and eastern Texas, and rains in other sections, plus the freight car shortage, brought receipts and inventories to their lowest level since 1943. The Department reports that a number of Southern wood pulp mills have been running 1 to 1½ days a week on war-prisoner cut pulpwood.

Receipts of pulpwood in the Lake States in March totaled 234,000 cords of domestic wood and 36,100 cords of imported wood; compared with 345,105 cords of domestic and 29,195 cords of imported wood in March 1944; and with 731,300 cords of domestic wood in the first 1945 quarter, compared with 995,418 cords in 1944; imports in the first 1945 quarter, 93,100 cords, compared with 92,230 cords in 1944. Spruce logs are in very short supply and labor in this area is at a low level, but is expected to improve with additional war prisoners. February receipts were 19% above January, with domestic receipts up 20% and imports up 15%. Consumption was somewhat lower, inventories showing a 9% increase in February over January.

Receipts of pulpwood in the Pacific Northwest region in March totaled 177,000 cords of domestic wood and 7,200 cords were imported, compared with 203,655 cords of domestic wood and 6,842 cords of imported wood in 1944. Receipts for the first 1945 quarter totaled 496,700 cords of domestic wood, compared with 551,449 cords in 1944; imports totaled

33,200 cords for the first 1945 quarter, compared with 18,847 cords in 1944. Lack of truck tires has curtailed the use of about 400 urgently needed logging trucks in this region. The expected release of workers in shipyards may not materialize the Department reports, as the yards have obtained new contracts and expect to continue activities throughout 1945. February receipts of wood were 11% under January, but imports increased 60%. Of the 14,000 to 15,000 war prisoners assigned to pulpwood operations throughout the country at the end of March, 2,000 to 3,000 are required for camp maintenance and operation, leaving 12,000 prisoners of war available for the actual harvesting of pulpwood.

OPA Files Suit Against Jobber

The Office of Price Administration filed on May 7 suit in the Federal Court in New York for an injunction and for treble damages not less than $60,000 against Irving G. Perlman, doing business as Bag and Paper Company, 17-19 West 45th street, New York, according to an announcement by Daniel P. Woolley, Regional OPA Administrator.

OPA's complaint, filed by Callman Gottesman, Chief OPA Enforcement Attorney, New York Metropolitan Office, charged that Perlman had been selling certain coarse paper products, including creping kraft and bleached white processed kraft paper at over ceiling prices.

Mr. Gottesman stated that this was the first action brought against a paper jobber in this district in OPA's new drive for compliance amongst jobbers of paper, paperboard and waste paper.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 31	88.9	Apr. 1	85.7
Apr. 7	86.8	Apr. 8	86.2
Apr. 14	87.4	Apr. 15	84.7
Apr. 21	90.7	Apr. 22	89.7
Apr. 28 (Revised)	88.0	Apr. 29	89.8
May 5	*90.7*	May 6	88.9

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	82.4	88.1
1945	86.7	89.4	90.2	*88.1*									

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	67.5	80.2	85.5	91.3	102.5	88.7	88.3	*88.5*
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 24	99	Mar. 25	97
Mar. 31	100	Apr. 1	93
Apr. 7	92	Apr. 8	94
Apr. 14	97	Apr. 15	92
Apr. 21	98	Apr. 22	98
Apr. 28	99	Apr. 29	98
May 5	*97*	May 6	98

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95	97	*97*									

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

D. B. Smith Elected Sec.-Treas.

In announcing the recently elected officers of Trees for Tomorrow, the name of D. B. Smith, general manager of the Ward Paper Company of Merrill, Wis., who is secretary and treasurer of Trees for Tomorrow Inc., was inadvertently omitted.

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Edited by R. G. Macdonald, Secretary

An Evaluation of Indirect Versus Direct Cooking of Sulphate Pulp*

By E. A. Harper[1] and N. V. Edmonson[2]

Abstract

This paper presents the actual mill results on both indirect and direct cooking of sulphate pulp over a period of 6 months in each case. It is indicated that indirect heating produced more uniform pulp of high strength value. The steam consumption and digester yield appeared to favor direct heating.

Steam with superheater for indirect heating is to be avoided as it tends to carbonize the liquor in the heater tubes.

Introduction

This paper does not pretend to be a comprehensive study of all the variables entering into digester operation. The material collected in this paper is from the operating and laboratory statistics. It covers a period of 6 months of mill operation in 1941 when the mill was cooking sulphate pine pulp with indirect heating and 6 months of mill operation in 1944 when the mill was cooking sulphate pine pulp with direct heating.

Normally, the pulpwood supplied to the mill is a mixture of slash 20.0%, loblolly 35.0%, longleaf 35.0%, and pond pine 10.0%. The logs are fairly uniform in size and they are cut into approximately 5 foot lengths. The entire merchantable length of the tree is used in the process.

Mill Equipment

The mill is equipped with five Blaw-Knox digesters with a capacity of 3900 cubic feet. These digesters are equipped for indirect heating, with the circulation from the middle to both top and bottom of the digester. A uniform flow to and from the points of liquor withdrawal and introduction is accurately controlled by means of valves in the circulating liquor lines. The heaters are equipped with fifty 18-8 stainless steel tubes, with a heating surface of 320 square feet. The outside diameter of these tubes is 1.375 inches, the inside diameter is 1 7/32 inches. The circulating pumps are driven with a 40 hp. motor at 870 r.p.m. with a capacity of handling 15 to 1800 gallons per minute. This means a complete cycle of liquor in the digester within 10 minutes.

Operation

All digester charges are weighed by a Merrick Weightometer. The average weight per digester charge is 21.5 tons of moisture-free wood. The liquor volume for indirect heating is 15,500 gallons and for direct heating is 12,000 gallons. The liquor volume is calculated on the basis of 50% moisture in the wood. Strong black liquor approximately 12° Baumè at 60° F. is used for digester back fill. The active alkali per digester charge was the same for both indirect and direct heating, namely 7600 pounds Na_2O. The average per cent sulphidity was approximately the same in both cases, as the mill maintains the sulphidity between 30 to 32% of the active alkali present in the white liquor. The digester top pressure for both indirect and direct heating was between 110 to 115 pounds gage with a total cooking time of 4 hours and 20 minutes.

The strength properties of the pulps were determined in a constant humidity room on hand sheets prepared after processing 67.2 grams of moisture-free pulp in a laboratory size Kollergang for 4 r.p.g. The TAPPI Standard T 205 m-36 is the procedure used for testing pulp for mill control and evaluating of pulps.

Discussion

1. The results, tabulated in this paper were collected from actual mill operation, over a period of time, on both indirect and direct heating. The operating conditions of the mill were practically the same in both cases as to seasonal wood, permanganate number, and pulp brightness.

2. The heat in the condensate return from indirect heating of a sulphate digester is to be considered as credit to steam production and boiler feed water make-up. In the case of indirect heating steam credit

TABLE I.—OPERATING RESULTS

	Indirect	Direct
Moisture-free wood per charge, tons	21.5	21.5
Active Alkali as Na_2O per charge, lb.	7,600	7,600
Total liquor volume per charge, gal.	15,500	12,000
Digester concentration, gal./l.	44	53
Steam per cook, lb.	38,600	37,100
Cooking conditions:		
Time to 212° F., min.	30	40
Time from 212° F. to top pressure	2 hr. 15 min.	2 hr. 00 min.
Time on top pressure	1 hr. 35 min.	1 hr. 40 min.
Total cooking time	4 hr. 20 min.	4 hr. 20 min.
Air dry pulp per digester, tons	9.7	9.9
Permanganate No. start blow	14.5	13.5
Permanganate No. middle blow	14.8	14.6
Permanganate No. end blow	15.2	15.8
Digester maintenance cost per ton, $	0.10	0.06
Power cost per ton, $	0.052	

* Presented at the meeting of the Alkaline Pulping Committee of the Technical Association of the Pulp and Paper Industry held in Savannah, Ga., Oct. 19-21, 1944.

[1] Member TAPPI; Tech. Director, Brunswick Pulp and Paper Co., Brunswick, Ga.

[2] Brunswick Pulp and Paper Co., Brunswick, Ga.

TABLE II.—BLEACH PLANT

	Indirect	Direct
Chlorine No.	7.5	7.7
Chlorine per ton, lb.	145	144
Caustic soda per ton, lb.	103	101
Lime (neutralization) per ton, lb.	85	88
SO_2 per ton, lb.	11	10
G. E. Brightness	71.3	71.1
Residual chlorine after Chlorination (% basis stock)		
High	1.07	1.15
Low	.88	0.39
Average	.98	1.00

TABLE III.—PULP TESTING STATISTICS (BLEACHED PULP)

	Indirect	Direct
Basis weight g/sq. meter	60	59.5
Burst factor	28	28
Tear factor	227	204
Breaking length, meters	3,960	3,970
Freeness (Green)	716	725

has been applied because of the sensible heat in the condensate return.

3. A series of samples were taken from the digester blow line in order to determine the variation in permanganate numbers throughout the cook in both indirect and direct heating. These results are shown in Table I.

4. In the bleach plant operation it is very evident that the stock from indirect cooks takes the chemicals more consistently and more uniformly which is vitally important to uniform brightness. This is indicated by the residual chlorine after chlorination. This is shown in Table II. It is also shown in the records that stock from indirect cooks withstand the bleach plant operation better than stock from direct cooks as indicated by the tear. (See Table III.)

There are oher things to be taken into consideration along with indirect heating and that is maintenance cost of heaters, circulating pumps, steam traps, valves, and strainers on the liquor circulation system. This is shown in Table I under operating results as maintenance cost. In three southern mills the average life of the heater tubes was 4 to 5 years. When the tubes failed, it was due to pin holes in the tubes, probably caused by electrolytic action.

Conclusions

1. In producing sulphate pulps of high quality and high brightness indirect heating should be considered.

2. The steam applied to digester heaters should be desuperheated. Steam with superheat has the tendency to carbonize the liquor on the heater tubes. This decreases the over-all heat transfer, which increases the total steam consumption per cook.

3. There appears to be a slight increase in digester yield in the case of direct heating. This may be attributed to the fact that a greater number of direct cooks blow clean.

Reduction of Rust Losses

New, war-developed rust preventives and their application for reduction of rust losses in industry are discussed in "The Service Factor" just issued by Sinclair Refining Company.

The presentation gives information about the proper type of rust preventive and method of application for protection of external surfaces of machinery, internal surfaces, bearings and other moving parts, engines, and automotive vehicles. The treatment covers idle machinery and equipment in storage and in transit.

Preliminary treatment necessary before application of rust preventives is outlined. A useful chart identifies the various rust preventives with Government specification number preventives. Copies may be obtained without charge upon request to "Service Factor" Sinclair Refining Company, 630 Fifth avenue, New York 20, N. Y.

MEMBERS OF THE FIBROUS AGRICULTURAL RESIDUES COMMITTEE OF TAPPI
Picture Taken at the Northern Research Laboratory, Peoria, Ill., April 25, 1945

What Practical Lines Should Be Followed As to Fundamental Research on Sulphate Pulp Byproducts*

By Torsten Hasselstrom[1]

Abstract

A raw material is usually introduced commercially in its natural state with or without refining. From this beginning the development of crude chemicals and finally the production of high grade products can logically be expected. Research is required to attain complete utilization as well as to meet the completion of other materials.

Tall oil and the other products other than pulp obtained from the sulphate process should be recognized as important chemicals; the successful utilization of which is dependent on research. It is recognized that present knowledge of these materials is limited and the suggestion is made that the fundamental and industrial research be carried on in a public agency for the greatest benefit to all concerned.

The creation of practical uses for a raw material calls for a great variety of knowledge, of which chemistry is one. There are many tales of how the necessities surrounding us in our daily life came about, but there is little, if any, information available about the kinetics responsible for the growth of a natural product into marketable commodities through chemistry, except for the fact that the object of fundamental research is to create uses for natural products. Lack of established principles for defining what is called general progress makes it impossible to suggest any precise rules for the guidance of a raw material through the different phases to attain commercial and industrial applications.

Marketing

It might, therefore, be permissible to use arbitrary rules. In analyzing the evolution of chemical industry, a three step sequence in the commercial exploitation of a raw material is noted. The first step comprises the utilization of the product in its natural state, with or without refining. The second step is the use of crude chemicals, made from the more refined or crude natural product, and lastly, the third step is represented by the high grade articles of commerce made from the separated constituents of the original raw material by use of advanced industrial processes. These steps overlap and are thus not always clearly distinguished, particularly in more recent developments. The duration of each step appears to depend on the results of coordination between progressive, fundamental research and business competition.

Fundamental research plays a less important part in the first stage of development of a natural product into a useful commodity. Its main object here is confined to describing the characteristics of marketable products and accumulating those data which are necessary for standardizing the material and improving engineering processes in order to secure economic production. When business competition sets in, caused, for instance, by the introduction of competitive products, fundamental research is requested to improve and widen the use of the original raw material. These changes in demand need not be caused by fluctuations of general business trends, but frequently come as a surprise. Chemical research is then called upon to meet this condition in the shortest possible time. Considering that in this stage of development there is usually a lack of fundamental knowledge of the components of the raw material, including its derivatives and their chemical properties, research is compelled to follow the path of least resistance and concentrate its efforts on improving these products which are most threatened by outside competition. This transition stage is usually accompanied by business consolidations and by important improvements in production methods. The fundamental chemical problems have to be left unsolved until the difficulties, both as to sales and to production, have so enlarged as to necessitate the scientific approach.

The improvements of marketable products together with chemical sales service, when properly coordinated, leads as a rule to the creation of new products and a secure economic progress over a long period of time. In this second stage, of the three step cycle, an expansion of markets is encountered, which in its turn, produces increased chemical knowledge and widens the potentialities of the original raw material. When fundamental research is introduced at this time, it is least expensive, and results are frequently proven most beneficial, having the opportunity of aiding effectively the improvement of processing methods, standardization of products, and sales service. Having solved the initial problems, fundamental research, if given a chance, steps into a highly creative period, not immediately visible, since production and salesmanship are bearing the main burden of responsibility for sound economic progress. Gradually the original raw material is getting the attention of research institutions, universities, and individual investigators. The chemical reactions of the various components of the raw material are examined and made economically understood. New applications are found which frequently differ entirely from the employment originally visualized for the natural product.

The practical utilization of this rapidly growing knowledge usually encounters great difficulties. The manufacturer, having based his business on certain lines of production, is hesitant to expand commercially into entirely new fields because such an expansion would mean new investments, scrapping of old machinery, increase in engineering and chemically trained staffs, as well as sales reorganization in order

* Presented at the meeting of the Byproducts Committee of the Technical Association of the Pulp and Paper Industry held in Savannah, Ga., Oct. 19, 1944.

[1] Member TAPPI; U. S. Industrial Chemicals, Inc., Newark, N. J.

to develop new customers. In consequence only very unusual reasons, such as business depressions, hard outside competition, war or sudden peace, are able to induce the introduction of the third step. When, however, all the obstacles are finally overcome, the progress is only limited by the scope of fundamental research and business initiative.

Chemical research is called upon to perform many distinctly different tasks in the industrial development of a raw material into useful commodities. The assignments vary depending on how they best can aid and secure economic success. In order to achieve this purpose fundamental chemical research proceeds along the following lines: analytical description of the crude raw material; standardization of raw materials and finished products; research pertaining to production and engineering problems; scientific research dealing with the characteristics of physical and chemical properties of raw material, derivatives, intermediates, and finished products; and finally, but not the least important, research concerning industrial applications and improvements of finished products, which are summarized under the heading: technical sales service. It is further understood that the sound development of any single group depends on the timely progress of the others. In the long run any one individual branch of research is not superseded by any other in importance, although in the different stages certain lines of research may, for a certain length of time, depending on business requirements, be pushed into the limelight.

The use of this arbitrarily chosen standard for the development of a natural product into marketable commodities may aid in the present discussion: "What practical lines should be followed as to fundamental research on sulphate pulp byproducts?" Should tall oil, sulphate turpentine, and lignin be classified as byproducts? It is thought not, since they represent about one half of the weight of the wood utilized in the pulping process. The name "chemical products" seems much more appropriate.

Tall Oil Research

The present war has brought about an increased demand for crude, semirefined, and refined tall oil, which has caused most of the kraft mills to recover the skimmings or convert them into crude tall oil, which now enjoys a great variety of uses. The market value of the different brands of tall oil is governed by the price of rosin and fats. Except for certain specialties, tall oil and tall oil resin acids never have reached the price levels of pure fatty acids, and high-grade wood and gum rosin. Tall oil is unique as an industrial raw material because its chief components are two of the staple raw materials: resin acids and fatty acids. It is believed that fundamental research on tall oil is confronted with two equally important main problems. The first one is to establish, improve, and extend present uses of crude, semirefined, and refined tall oil; the second is to create practical processes for separating on an industrial scale the main constituents of tall oil in order to establish a pine tree resin and pine tree fatty acids as independent new types of chemical raw materials, superior to wood and gum rosin and comparable to animal and vegetable fatty acids.

The satisfactory solution of the first task is most logically that it be left to the tall oil producers individually, who during this emergency period have developed specific use for their products and now desire to retain this business after the war. A concentration on these problems includes to a considerable extent chemical sales service, consisting chiefly of advising the customer how tall oil should be employed to the best advantage in making the finished product. It further comprises education of the tall oil producer in the fundamental chemistry of the constituents of tall oil, including adjacent competitive fields, such as Naval stores, fatty acids, etc., in order to improve existing refining processes of tall oil to satisfy individual applications.

The present knowledge about tall oil chemistry is rather sketchy. While it is possible to list several of the components, it is not certain whether or not the tall oil fatty acids belong to the series of vegetable drying oils; nor is the ratio between unsaturated and saturated fatty acids in this mixture known. Unknown is how the constituents of tall oil vary as to location of growth, to seasons, and to the status of cut wood. It is obvious that this kind of information is highly necessary. When fats and oils from other sources will again be abundantly available, the trade will not be satisfied with data, such as acid numbers and fatty acid content, etc., alone, since increased competition will force the manufacturer of the finished products to care whether he uses a fatty acid with 10 or 50% of linoleic acid.

It is believed that the work on standardization methods developed for the evaluation of tall oils has been very successful, both as to planning and results, and that this work should be continued and broadened. It may be recalled that a single concern and its director for development deserve great credit for having burdened themselves with such a laborious and expensive task. The question remains: Should not work on problems of this type as well as the development of the fundamental chemistry of tall oil be made the responsibility of the whole industry? Such an arrangement would make it possible for the pioneers in the industrial development of this product to employ available research funds and manpower for an accelerated vertical expansion and induce the undecided ones among the mills to pay an increased attention to the exploitation of their chemical products.

In case the fundamental research on tall oil should follow this line, its importance as a chemical raw-material would soon reach the same standing as one of its chief competitors, namely, wood rosin. It may be concluded that the steam-distilled wood rosin industry is concentrating its efforts on making crude chemicals from a more refined or from the crude natural product thereby striving to eliminate the marketing of plain wood rosin as such and thus achieving a greater variation of marketable products at higher net profits. The gum rosin industry has not yet completed the first cycle, since the producers are still experimenting with better production methods to obtain a satisfactory crude raw material, namely, gum rosin. Considering the variety of products, which are manufactured from animal fats and vegetable oils, such as: explosives, plastics, Nylon, perfumes, etc., there is reason enough to assume that this important competitor to tall oil has reached the third stage of industrial development.

Regardless of whether or not the industry concentrates on the development of special uses for tall oil, it is probable that there will be a large surplus of the crude material after the war because of the rapidly increasing potential domestic production and the threats of imports. It is believed that this oversupply could be taken care of, if the crude by means of

further processing is separated into its constituents: resin acids and fatty acids and these introduced in the market as superior chemical raw materials in competition with common rosin and fatty acids. This viewpoint rests upon the fact that the crystalline resin acids of tall oil are uniform in composition in contrast to those of gum or wood rosin and that the fatty acids contain acids belonging to the group of drying oils, of which the United States always has been an importer.

Should this viewpoint be acceptable to the industry, fundamental research has to be speeded up, and drafted to determine the status of these raw materials, a new pine tree rosin and a new fatty acid mixture, as new products of commerce, and above all to aid in the selection of industrially suitable practical processes for large scale manufacture of these materials. This last task should not prove to be too difficult, since a number of separation methods have been suggested. To our knowledge industrial separation of the constituents of tall oil is not being practiced in the United States, but from recent information it is learned that a small kraft mill in Sweden, namely Mo and Domsjoe, has carried out this operation on a pilot plant scale for a number of years. It should be mentioned, however, that business conditions for a more diversified utilization of tall oil have been more favorable in Sweden because of the country's isolated geographic position and the lack of a domestic Naval stores industry producing rosin. The main difficulty for the domestic producers to follow suit is probably lack of coordination of interests and the feeling that the chemical products obtained in the sulphate process is relatively unimportant in the economy of the kraft mill. This picture is bound to change when it is realized that tall oil at small processing costs could be sold at $150 to $200 per ton, if separated into its constituents, which as to volume would have an almost unlimited market.

Sulphate Turpentine

The research problems involved for sulphate turpentine are different from those of tall oil, but they are apt to become similar, should the kraft mills decide to capitalize themselves on the potentialities of this chemical product. The tendency for progressive mills in the past was to refine their crude to marketable refined turpentine. This attempt did not give the expected economic result, partly because the refined product was compelled to trail the fluctuating market prices of gum spirits of turpentine, and partly because of processing difficulties, which caused the formation of undesirable monocyclic terpenes of low market value. It must therefore be regarded as a satisfactory development that the kraft mills are at the present able to dispose of their crude sulphate turpentine as a chemical intermediate to those chemical industries, which make chemicals such as pine oil, terpineol, and beta-pinene.

The problem remains, however, how could the kraft mills obtain a better price for their crude? The answer lies apparently in initiating scientific research along those lines which would promote and expand applications for this product. Considering the industrial processes, which are employed in the manufacture of chemicals from turpentine, the byproducts, the monocyclic terpenes, are the least desirable. In a not too distant past this fraction was termed dipentene because of the comparative ease by which this hydrocarbon was identified by its bromine addition product, although at low yields. It is believed that when the large group of monocyclic terpenes is fully understood, and derivatives made of the individuals, new uses will be created, which would make crude sulphate turpentine a more valuable chemical raw material. A thorough study of the chemistry of these compounds would be particularly timely in view of the recent results obtained in the investigations of menthol and carvomenthol, and because of general progress made in the adjacent field of hydroaromatics. The monocyclic terpene group of hydrocarbons has so far remained the stepchild of classic terpene chemistry. There seems to be a continued commercial interest in beta-pinene for its use in certain types of synthetic resins. Gum spirits of turpentine and crude sulphate turpentine are the only sources for this high priced hydrocarbon. It is logical to suggest that the reaction series which lead to the synthesis of beta-pinene should be reinvestigated with the purpose of creating possibilities for making of synthetic beta-pinene through commercial processes.

In the past some mills have recovered methanol, which, in addition to mercaptans and turpentine, is obtained in the condensed relief gases of the pulping process in yields of about 10 to 12 pounds per ton of pulp. Because of the high costs of refining, sulphate pulp methanol was eliminated from the market by synthetic methanol. It would seem worthwhile to reinvestigate the aqueous portion of the condensate in order to clarify whether there would be any commercial uses for crude dilute methanol as a chemical intermediate. This suggestion is being made because of the ever widening uses for synthetic methanol as an important intermediate in making of chemicals. The interesting fact that methanol, in contrast to ordinary ethyl alcohol, does not form constant boiling mixtures with water should be an inducement to introduce the creation of inexpensive practical processes for a direct use of dilute methanol in the making of chemicals. Should this problem be of interest, the rubberylike polymerized furane derivatives separating from the sulphate methanol solutions would also warrant additional study in view of the increasing general interest in such type of compounds.

The largest in volume, except cellulose, of the chemical products obtained from wood is lignin. Despite limited chemical knowledge about this material, great effort is being made to utilize its thermosetting properties for making plastics. Considering the results obtained up to date, it is believed that, should fundamental research on sulphate lignin be expanded and closely coordinated with the study of lignosulphonic acid and lignin obtained in the saccarification of wood, lignin would sooner assume its place as one of the most valuable natural products in our possession. The magnitude of this problem cannot be overestimated considering that more than 35 million tons of lignin are lost annually in sawdust, shavings, and other kinds of mechanical waste, in the waste liquor of the sulphite system and in the soda recovery of the kraft mills.

Research

In an analysis of the functions of research in the development of raw materials into marketable commodities a lack of enterprise to promote investigations which deal with improvement of inventions, manufacturing, and sales service problems would not be expected since they belong to the realm of private initiative. It is far more difficult to suggest the proper procedure of how to go about providing fundamental scientific and engineering knowledge, the necessary prerequisites in aiding industrial progress and which in order to be fully utilized has to be made available

to consumer and producer alike. Modern society is aware of the power of scientific and industrial research, but is still unable to define those components of the driving force which causes discoveries and inventions. When this phenomenon is fully known, then knowledge can be so coordinated with the economic and social sciences as not to waste the investments nor the efforts of the scientist, inventor, and engineer.

The benefits which have come to the pulp and paper industry from the scientific work carried out by the U. S. Forest Products Laboratory, Institute of Paper Chemistry, the Regional Laboratories of the U. S. Department of Agriculture, U. S. Bureau of Standards, as well as other research institutions and progressive mills have their great share in the high status of this industry today. In order that the kraft mills should obtain the scientific information necessary to develop industrially their chemical products, it is believed, that should these research laboratories expand so as to include these specific needs and to coordinate research with adjacent fields, the expected results would not be long in forthcoming. Interlocked scientific problems should not be separated. Here, if anywhere, the law of give and take applies to its fullest extent. Adherance to this principle is the assurance of rapid success.

Realizing that the utilization of the byproducts of kraft mills as chemicals is of an ever increasing importance to national as well as to local economy, it is suggested that scientific and industrial fundamental research should not be carried out at an arbitrarily chosen geographic point, distant from the center of industrial activities and source of raw materials. It would be of incalculable regional importance that those parts of the country, which have shown a steady growth of heavy industry but are lacking in research institutions, should be provided with effective means for acquiring such fundamental knowledge which is necessary to secure progressive exploitation of natural resources.

B. F. Goodrich Chemical Co. Formed

The establishment of B. F. Goodrich Chemical Company, a division of The B. F. Goodrich Company, with offices and laboratories in Cleveland, Ohio, and manufacturing plants in Ohio, New York, and Kentucky, is announced at Akron, Ohio. B. F. Goodrich Chemical Company is engaged in the manufacture and sale of the company's line of Geon vinyl resins, chemicals, and synthetic and reclaim rubbers.

William S. Richardson, with B. F. Goodrich since 1926, is president of the chemical company. Mr. Richardson has held executive positions with B. F. Goodrich and is vice-president of Hycar Chemical Company organized in 1940 by B. F. Goodrich and Phillips Petroleum Company to manufacture and sell synthetic rubbers. This company was the first and is today the largest private commercial producer of butadiene-type synthetic rubber in the United States.

B. F. Goodrich Chemical Company offices and service laboratories are located in the Rose Building, Prospect Avenue and East Ninth street in Cleveland.

Goulds Pumps at War

Goulds Pumps at War is the title of a booklet just issued by Goulds Pumps, Inc., Seneca Falls, N. Y. It presents the story of the importance of pumps in the war effort and illustrates some of the many types in the concern's large line of industrial pumps.

A. S. T. M. Standards on Paper

The second edition of A.S.T.M. Standards on Paper and Paper Products provides in their latest form, as of November, 1944, all of the 49 specifications, test methods, and related standards that have been developed through the work of A.S.T.M. technical committees, particularly Committee D-6 on Paper and Paper Products. A number of standards developed in Committee D-9 on Electrical Insulating Materials are given, but for the most part the items are in the jurisdiction of Committee D-6.

Specifications included cover the following: lime and quicklime for paper and pulp manufacture; waterproof paper for curing concrete; phenolic laminated sheet and laminated thermosetting materials; vulcanized fibre sheets, rods, and tubes for electrical insulation.

Test methods cover untreated paper used in electrical insulation; bulking thickness; machine direction; water-soluble acidity or alkalinity; resin; sampling; ash content; casein; opacity; paraffin content; starch; conditioning paperboard and folding endurance; also moisture; thickness; basis weight; pentasans; internal tearing resistance; surface wettability; adhesiveness (gummed tape); flammability (treated paper and paperboard); etc.

Committee D-6 has endeavored to cooperate closely with all interests involved and on a number of projects that are of interest to the T.A.P.P.I. It works jointly.

This 192-page book can be obtained from A.S.T.M. Headquarters, 260 S. Broad Street, Philadelphia 2, Pa., at $1.50 each, with reduced prices on orders in quantity.

Harold Hibbert Honored

Dr. Harold Hibbert, former professor of Industrial and Cellulose Chemistry at McGill University was awarded the honor of membership in the American National Academy of Science at its semi-annual meeting in Washington, D. C., on Tuesday, April 24. This is the highest scientific award given in the United States, and was accorded him in recognition of his numerous contributions to organic chemistry, particularly those relating to explosives, textiles, cellulose, and wood-chemistry.

Most of Dr. Hibbert's investigations were carried out in the Pulp and Paper Institute attached to McGill University. His sicentific results have found important industrial applications, notably those concerned with his inventions relating to Prestone anti-freeze, so well known to motorists, and the value of which for military aviation has been so well established in the present conflict.

Dr. Hibbert's work on the admixture of glycols with glycerine in the manufacture of low-freezing nitro-glycerine explosives has served to largely eliminate the dangers of dynamite.

More recently, his work on the chemistry of wood, pulp, and paper, carried out in the last twenty years at McGill, especially that relating to the chemistry of lignin, has won for him an international reputation in this field.

The industrial application of this knowledge has already been exemplified in marked improvements connected with the bleaching of pulp; manufacture of vanillin from waste sulphite liquor, etc.

He is now recovering from a serious illness at his residence, 140 Edgehill Road, New Haven, Conn., and expects to devote much attention in the near future to further applications of his scientific results in the fields of wood utilization, pulp and paper, and textiles.

The Recovery of Byproducts from Kraft Black Liquors by the Goodell Process*

By H. F. Lewis[1]

Abstract

The Goodell process is described as a possible means for recovering useful chemical byproducts from the lignin removed from wood in the kraft process. The process involves the separate drying of the black liquor, destructive distillation of the black liquor solids, use of the noncondensable gases as a source of heat, separation of the aqueous distillate and tar, and further separation of the tar into phenolic oils and neutral compounds. The phenolic oils contain phenol, guaiacol, o- and p-cresol, creosol, and the higher phenols. The complete separation and purification of these lower constituents is not easy in view of the presence in the crude phenolic oil of many substances which condense readily with phenolic compounds. These lower phenols can be recovered to the extent of approximately 20 to 25% of the dry tar, and the latter is obtained to the extent of 5 to 7% of the black liquor solids. Thus, there are produced up to 250 pounds of tar per ton of pulp and up to 50 to 60 pounds of phenols boiling up to 220°C. The cost of separating these products from the crude tar can only be developed from actual operation of the process on a large scale, and the usability of the phenols must be determined by the consumer.

Present processes in the kraft industry result in the recovery of approximately 45 pounds of unbleached pulp per 100 pounds of moisture-free wood substance; 55 pounds of material are either lost in the pulp mill effluents or are burned in the recovery process to yield heat. In the days to come, the industry is bound by public opinion or by governmental pressure to become increasingly conscious of the importance of conserving its raw materials or utilizing them to the utmost efficiency. In the present operation, the organic matter going in the black liquor, which comprises half or more of the total weight of the wood used, must be considered at its actual B.t.u. value which varies, of course, with the mill. Any process for utilizing a portion of this organic material is faced with the necessity either of bringing in returns equal to or greater in amount than the heat value of the organic matter thus used or of producing essential products for our over-all national picture of chemical production.

One source of byproduct chemicals comes from the resins and fatty substances in the pines used in the kraft process. These reappear in the condensates and sulphate black liquor as turpentine and tall oil, and the recovery of purified turpentine and the conversion of tall oil into chemical components illustrate this point. The operation will be successful in the post-war period provided the crude products from the tall oil can be sold at a price greater than the value of the B.t.u.'s lost to the recovery system, or abietic acid and its isomers, and oleic acid, linoleic acid, or the sterol fill an unsatisfied need in the over-all chemical picture of the United States.

The lignin fraction of the black liquor must be considered as a second possible source of chemical byproducts from kraft pulping. During the sulphate cook, lignin in wood is rendered soluble by a process, the chemistry of which is not entirely clear but which, in the main, is assumed to result from the formation of a mercaptan group by reaction between sodium sulphide and the keto radical in the lignin molecule. Simultaneously, the lignin is drastically altered by the alkaline liquors with the subsequent formation of highly condensed alkali lignin containing both phenolic hydroxyls and the above mercapto group. The resulting product is dissolved in the alkaline liquor as a sodium salt and is converted to sodium carbonate in the recovery.

These alkali lignins and alkali thiolignins can be recovered from the kraft liquors (or alkali lignins alone from the soda liquor in a soda cook) by mild acidification. The well known product, Meadol, is recovered by the Mead Corporation by utilizing the carbon dioxide of the flue gases to neutralize the excess alkali. Extensive studies have been carried out with these alkali lignins in one form or another as resins, binders, and fillers, and for many other uses.

Recently, the alkali lignins from the soda process have been reacted to form a series of esters by condensing them with the acid chlorides of the corresponding acids in the presence of pyridine *(1)*. Even more recently, they have been converted into a series of ethers by converting the sodium salts into thallium, lead, mercurous mercury, cupric copper, or stannous tin derivatives of the lignin and condensing these derivatives in turn with the alkyl halides, particularly the bromides or iodides. Alkali lignins can thus be rendered soluble in a variety of organic solvents; where the acid or alkyl radical is high enough in molecular weight, they may even become soluble in petroleum ether.

It is not the purpose of this paper to call particular attention to the derivatives of the alkali lignin, but

* Presented at the meeting of the Byproducts Committee of the Technical Association of the Pulp and Paper Industry, at Savannah, Ga., October 18-20, 1944.

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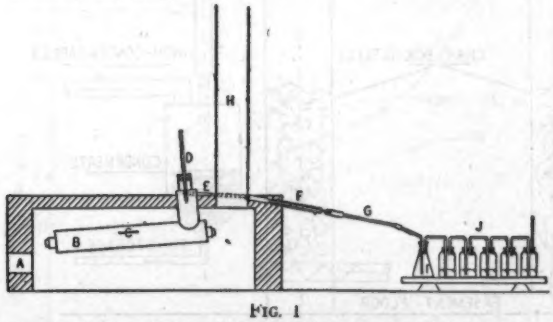

FIG. 1

Experimental Destructive Distillation Unit. A. Location of kerosene torch; B. 8-inch pipe retort (4.5 feet long); C. Thermocouple for furnace temperature (in furnace wall); D. Mercury thermometer for vapor temperature; E. ¼-inch pipe welded on back of retort; F. Liebig condenser; G. Air condenser (24 inches long); H. Stack; I. Erlenmeyer flask receiver (2-liter); J. Wash bottles for scrubbing gases.

rather to the conversion of the alkali lignin by destructive distillation into phenols and phenol ethers and other lower molecular weight chemicals.

Normally, the destructive distillation process is looked upon as being economically unsound, because the yields of recovered chemicals are low and the cost of operation is proportionately high when compared with similar figures for the corresponding synthetic chemicals. Such yields may, in some cases, be improved by modifying the destructive distillation process so as to carry it out *in vacuo*, and fairly high yields of certain chemicals may result thereby. Still another way to lower the cost would be to incorporate the destructive distillation process as one step in an over-all operation where the condensable products of destructive distillation can be recovered and the non-condensable products and residues can be utilized.

The Goodell process for the utilization of kraft liquor has been developed with this in mind. In its essential outline, it consists of a process for spray-drying the sulphate black liquors, conveying the spray-dried product through the heated chamber where the destructive distillation takes place, and discharging the residue into the normal black liquor recovery furnace. The yield of organic material converted to tar is about 5 to 7% of the black liquor solids or 17% of the organic matter in these solids. The loss of heat does not appear to exceed 15%, although this is a point which will have to be established after the Goodell process has been installed in its complete form. The black liquor solids have a heat value of 5000 to 7000 B.t.u. per pound, the char about 4700 to 5300 B.t.u. per pound, and the tar 15,700 B.t.u. per pound. The condensable distillate is recovered as a black tar which can be separated into its soluble components or sold as a crude product.

Some attention has been paid at The Institute of Paper Chemistry to the composition of this black tar as produced from jack pine. Naturally, it will vary somewhat with the type of wood pulped and on the conditions which occur in the destructive distillation unit. These conditions, in turn, depend upon the design and construction of the unit.

In the experimental work which follows, tars were prepared in the plant of the Stevens Point Pulp and Paper Company at Stevens Point, Wis., by Carl Moe.

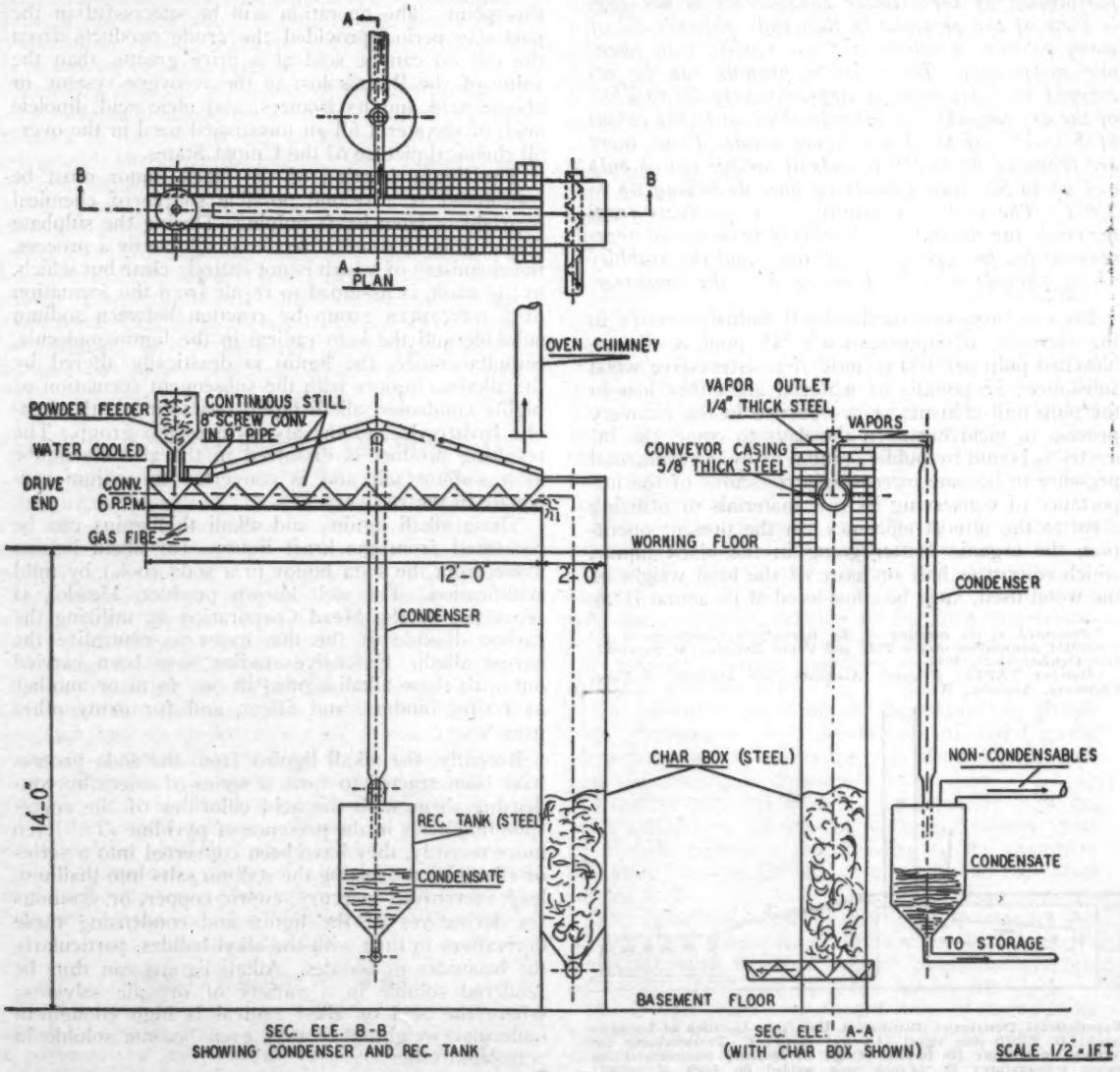

FIG. 2
Semicommercial Continuous Distillation Unit

The unit used by him is shown in Fig. 1. The operation of the unit was relatively simple; the retort was charged with black liquor solids, heat was supplied by a kerosene torch, and the tar and condensable gases were collected as shown. The tar thus recovered was shipped to the Institute, where it was fractionated. This unit was followed by an experimental semicommercial continuous distillation unit (Fig. 2), which has been operated with spray-dried black liquor for several years.

Experimental

Distillation of the Tar

The crude tar was found to contain approximately 8.5% sludge, which was largely a mixture of solid material carried over in the distillation operation and of settled tar. Because it was too thick to handle in an ordinary distilling flask, it was not further investigated. In an ordinary commercial operation, however, that part of the sludge which is settled tar could be expected to yield phenolic materials. Before the organic constituents of the tar could be separated, it was necessary to dehydrate it by heating on a steam cone at reduced pressure. The loss in weight of the tar amounted to 27.6%. The volatilized materials were, in turn, condensed to yield a product which separated into two layers—one aqueous, the other a light oil. The latter apparently contained a large amount of mercaptan material.

The dry tar was then distilled both at atmospheric pressure and *in vacuo* at 14 mm., using an asbestos-insulated Pyrex Klason distilling flask. Uniform and controlled heating was secured by using a 550-watt precision heater. Under these conditions, from 40 to 50% of the tar could be condensed when distilled at atmospheric pressure, whereas 82% were recovered at 14 mm. In the atmospheric distillation, the components of the tar came over without decomposition up to about 220 to 240°C., at which point the residue in the flask began to decompose into water and noncondensable gases. In each case, a hard black pitch residue was left in the flask.

Separation of the Volatile Products into Neutral and Phenolic Oils

The various condensates retained the odor of black liquor. Those from the atmospheric distillations separated into two layers—one aqueous, the other a reddish brown oil. The vacuum distillation of the tar, however, yielded a dark viscous product; during the last half of the vacuum distillation, the condensate was so thick that it was necessary to warm the condenser in order to prevent plugs.

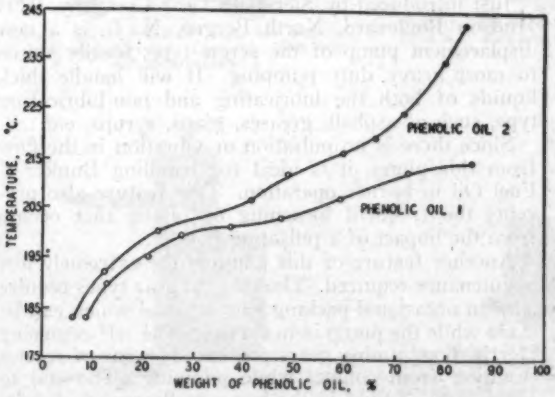

Fig. 3
Fractionation of Phenolic Oils

The yield of neutral oil in the distillate was determined by dissolving the condensates in 10% sodium hydroxide and extracting the resulting alkaline liquors several times with ether. The ether was removed after the extract had been dried over anhydrous sodium sulfate, yielding dark colored strong smelling neutral oils. The crude phenolic oils were recovered from the extracted alkaline solutions by making these solutions acid with dilute sulphuric acid and again extracting with ether. The yields of neutral and phenolic oils, as obtained in three experiments, are shown in Table I.

TABLE I.—YIELD OF NEUTRAL AND PHENOLIC OILS

		Neutral Oil		Phenolic Oil	
Distillation	Pressure	Basis, Distillate, %	Basis, Dry Tar, %	Basis, Distillate, %	Basis, Dry Tar, %
1	Atmospheric	22.5	9.25	73.7	30.4
2	Atmospheric	31.1	16.8	67.0	36.2
3	Vacuum	30.5	25.1	59.6	49.0

The yield of crude phenolic oil obtained by distilling the dry tar at atmospheric pressure is seen to vary between 30 and 36% and the yield of neutral oil varies between 9 and 16.8%. In contrast, the yield of crude phenolic oil obtained by distilling the dry tar at 14 mm. pressure is about 49%. The crude phenolic oils contained not only the true phenols, but also rather complex tar acids which are decomposition products intermediate between the organic constituents of the original black liquor and the true phenols obtained as end products by destructive distillation. An increased yield of acidic material would result from a direct caustic extraction of the original dry tar. Such products as dissolve in the alkaline solution are commonly referred to as the tar acids; although they may contain phenolic groups in their molecular structure, they can scarcely be referred to as true phenols.

Investigation of the Crude Phenolic Oil

The crude phenolic oils obtained from the atmospheric distillation of the dry tar were fractionated with a large fractionating column built according to the specifications of Bridger *(2)*. The boiling point curves for the two experiments are shown in Fig. 3. Although the two runs do not check each other exactly, they indicate the general type of a distillation curve which might be expected from this particular product. They reveal the fact that the phenolic oil is a complex mixture of phenols somewhat similar in composition to the mixture which would result from the destructive distillation of wood. A small amount of phenol, the cresols, guaiacol, and xylenols are present in the distillate. The presence of phenol and guaiacol have been definitely established.

A summary of the yield of products obtained from

TABLE II.—YIELD OF PRODUCTS FROM THE TAR LIQUOR OBTAINED FROM THE DESTRUCTIVE DISTILLATION OF BLACK LIQUOR POWDER AT ATMOSPHERIC PRESSURE

	Tar Liquor As Received	Tar Liquor Less Sludge	Dry Tar	Crude Phenols
Sludge, %	8.5	0.0	.....	.....
Water and light oil, %	25.5	27.6	.....	.....
Dry tar, %	66.0	72.4	.....	.....
Distillate from dry tar, %	...	29.8–39.0	41.1–54.0	.....
Neutral oil, %	...	6.7–12.2	9.2–16.8	.....
Crude phenols, %	...	22.0–26.2	30.4–36.2	.....
Phenols, 180-186° C., %	...	1.6– 1.7	2.2– 2.4	6.0– 8.0
186-203° C., %	...	4.5– 6.6	6.1– 9.1	17.0–30.0
203-209° C., %	...	4.6– 5.0	6.4– 6.9	19.0–21.0
210-220° C., %	...	5.7– 6.3	7.9– 8.7	24.0–26.0
Over 220° C., %	...	2.9– 8.0	4.0–11.1	20.0

Black liquor solids per ton of pulp—2800 to 3300 pounds.
Tar from black liquor solids—5 to 7%.

the destructive distillation of the black liquor solids from jack pine is given in Table II. The yield of dry tar based on black liquor solids, as determined for a large number of test runs, is from 5 to 7% and the recovery of black liquor solids per ton of pulp is between 2800 and 3300 pounds for jack pine (the actual yield will, of course, be closely related to the pulping conditions employed).

Although the above experimental results cover the particular samples of tar submitted rather completely, the last question which might be raised is how consistent would such results be for a mill's operation. An attempt has been made to get some answer to that question. Tars have been prepared and run at widely different times on different samples of jack pine black liquor solids. In general, it may be said that yields from the black liquor solids and their compositions are relatively uniform within the limits of the variables of the various processes. Five separate samples, run either at Stevens Point or at the Institute, showed a yield of phenols boiling between 180 and 220°C. from 17.3 to 25.6% (as calculated on the tar). Although the production of phenolic oils and tars from the destructive distillation of kraft black liquor would not be by itself a profitable undertaking, as a single intermediate step in a continuing process it becomes interesting because its loss is largely one of heat and this, in turn, may be somewhat offset by increased efficiency in evaporation and burning.

Practical Considerations

The phenolic oils from the Goodell black liquor tar are somewhat similar to the phenolic oils which are found in the tars from the wood distillation operation. The two are significantly different from the coal tars which are presently used as sources of phenols in that they contain a large number of compounds, and the boiling points of these show a fairly even rise over a wide range. The separation of these various components into pure compounds is not easy. Utilization of the semirefined fractions in resins, etc., may be more practical and economical than an attempt to produce the pure compounds. The most important constituent phenols include phenol, *o*- and *p*-cresol, guaiacol, and creosol, as well as many higher boiling products. The black liquor tars and phenolic fractions are to be distinguished from the corresponding coal tar products in yet another way. The latter contain pyridine and other nitrogenous compounds, and the crude fractions are contaminated by very strong odors of these nitrogenous bases. On the other hand, the former contain sulphur compounds which give the fractions an extremely undesirable odor of a different type. The removal of this sulphur odor is considerably more difficult than the removal of the nitrogen bases from the coal tar derivatives. Before the Goodell tars and their constituent phenols find wide acceptance as sources of phenols, methods will have to be developed for markedly reducing the odor.

The destructive distillation of spray-dried black liquor yields, in addition to the tar and char, very appreciable amounts of gases and aqueous distillates.

The gases differ during the progress of the distillation when this is carried out by batch. During the early stages, they contain fairly large amounts of carbon monoxide and larger amounts of hydrogen and methane and have a calorific value of 5315 B.t.u. per pound. During the last half of the distillation the content of hydrogen and methane rises and that of carbon monoxide is decreased; the resultant gas shows a calorific value of 13,400 B.t.u. per pound. In the ordinary operation of the Goodell system, these gases would be returned to the furnace for burning and heat recovery.

The aqueous distillate contains methyl alcohol and small amounts of acetone and methyl acetate. The total amount of these represents about 1% of the weight of the dry tar and, since they are recovered by fractional distillation in the first fractions coming over, their recovery would appear to be of interest. In order to achieve the maximum yield of methyl alcohol, it is necessary to condense the volatile material removed when the crude tar is dehydrated.

A limited amount of work has been done on preparing resins from the phenolic fractions. The lower fractions—that is, those boiling up to 210°C.—give resins which can be used for laminating paper with fairly satisfactory strength and water resistance. The products have a strong odor of organic sulphur, and it would be necessary to refine the crude phenols before such resins could find application in the paper industry. In this connection, it should be said that experience in coal tar distillation finds little application in the separation of phenolic oils from wood tars, for many compounds are present in the latter which condense when the distilling temperature exceeds 205 to 210°C., with the resultant formation of a heterogeneous mixture of high boiling pitches.

In considering the over-all heat balance and the heat loss from destructively distilling black liquor solids by the Goodell process, it should be remembered that not only can the heat value of the char and of the noncondensable gases be used, but also the heat which is present in the tar-still residues. If the heat value of the dry tar is considered as lost, this loss would be approximately 15% of the heat in the black liquor solids.

Acknowledgment

This paper is based upon work carried on for the John Strange Paper Company by The Institute of Paper Chemistry. Much of the analytical work was performed by Major Ervin F. Kurth, now at Oregon State College. Information about the Goodell process was supplied by Carl Moe of the Stevens Point Pulp and Paper Company.

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2. Bridger, G. L., *Ind. Eng. Chem.* 30:1174-1180 (October, 1938).

New Screw Pump for Thick Fluids

Just introduced by Sier-Bath Gear Company, 9294 Hudson Boulevard, North Bergen, N. J., is a new displacement pump of the screw type, ideally suited to most heavy duty pumping. It will handle thick liquids of both the lubricating and non-lubricating type, such as asphalt, greases, soaps, syrups, etc.

Since there is no pulsation or vibration in the flow from this pump, it is ideal for handling Bunker C Fuel Oil in burner operation. This feature also prevents the frequent loosening of piping that occurs from the impact of a pulsating flow.

Another feature of this pump is the extremely low maintenance required. The internal gear types require only an occasional packing ring renewal which can be made while the pump is in service. The self-centering Herringbone timing gears prevent sidewear of screws resulting from contact while pumping. The end to center flow of fluid in the horizontally mounted units eliminates thrust bearings.

PAPER MILL OPERATORS!

Are you interested in—

CONTROLLED PARTICLE SIZE AND SETTLING RATES FOR LIME, BY METHOD OF REBURNING AND SLAKING?

Write us making appointment to have a talk with our engineer.

TRAYLOR ENGINEERING & MANUFACTURING CO.

ALLENTOWN, PENNA., U. S. A.

HIGHT TRUCK

WRIGHT-HIBBARD

INDUSTRIAL ELECTRIC TRUCK CO.

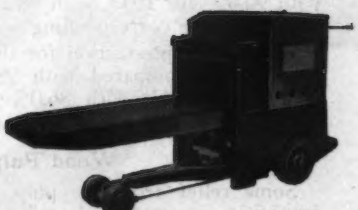
INCORPORATED

Phelps, New York

HIGHT TRUCK

Platform size 24 x 42 x 11" high, low position; 15" high when elevated. Capacity: 2000, 3000, and 4000 pounds.

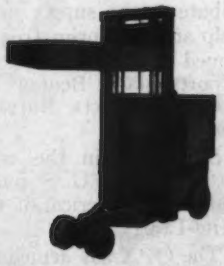
Capacity 2000 lbs. on forks 30" long. Truck turns from a 5' aisle into an intersecting aisle of 5'



Weight of 4000 lbs. capacity—2850, without battery. Truck turns from a 5' 4" aisle into an intersecting aisle of 4'.

Platform 24" wide, 53" long and 11" high, low position. Capacity 2000, 3000 and 4000 pounds.

The Wright-Hibbard Telescoping high lift truck is designed to operate in the most congested areas of factories and warehouses. The exceptionally narrow width and short overall length found in other Wright-Hibbard trucks are retained in this model.



Platform 24" wide, 42" long and 9" high, low position. Weight of 4000 lb. capacity—2800 without battery

New York Paper and Pulp Market Review

Future Civilian Paper Supply Appears Brighter With Prospect of Early Exports of Swedish Pulp—More Newsprint and Pulp Likely From Canada — Waste Paper Collections Are Much Improved.

Office of the PAPER TRADE JOURNAL,
Wednesday, May 16, 1945.

Improved outlook for a more adequate supply of paper for civilian consumption is based upon Swedish exports of pulp which are expected to begin at the earliest possible date. Reports state that the Swedish Navy is preparing to clear mines from northern waters to expedite pulp shipments. Reports indicate that preliminary arrangements covering shipments to Britain have been concluded. Prices have been agreed upon at a level which will afford a larger profit than for exports to the United States. Britain is stated to receive 275,000 tons of chemical pulp and 100,000 tons of mechanical pulp. This is part of the 2,550,000 tons which Sweden will ship to Europe and South America in twelve months. Reports also indicate that American paper mills have placed "tentative" orders for 900,000 tons of pulp and estimates in some quarters puts the tonnage of pulp available to the United State in twelve months as high as 1,200,000 tons, while in other quarters the estimate is about 650,000 tons.

A late report states that an increase of Canadian newsprint and wood pulp shipments to the United States in the third quarter will be from 5% to 6%, based on increasing supplies of pulpwood.

The index of general business activity for the week ended May 5 declined to 145.3, from 146.4 for the previous week, compared with 144.1 for the corresponding week in 1944. The index of paperboard production was 164.3, compared with 157.3 for the previous week, and with 161.6 for the corresponding week in 1944.

Paper production for the week ended May 5 was estimated at 90.7%, compared with 88.9% for 1944, with 90.6% for 1943, with 98.2% for 1942 and with 99.1% for the corresponding week in 1941.

Paperboard production for the week ended May 5 was 92.0%, compared with 98.0% for 1944, with 96.0% for 1943, with 86.0% for 1942, and with 84.0% for the corresponding week in 1941.

Wood Pulp

Some relief from the pulp shortage in the near future is expected to benefit domestic paper mills, even if Sweden makes no direct shipments to the United States. Sweden, in shipping to England, France, Denmark and Holland, will indirectly contribute to the supply in this country. Shipments of pulp and newsprint from this country will be discontinued as part of the war effort, as soon as Swedish exports start, Benton R. Cancell, director of the Forest Products Bureau of the War Production Board, stated.

Shipments in the current quarter amounted to 60,863 tons of U. S. pulp under allocation to Britain and South America, of which 43,000 tons were under Lend-Lease.

The OPA has denied the request of pulp importers that they be permitted to market Swedish wood pulp here at prices above domestic pulp ceilings. It is uncertain at this date whether Swedish producers will decide to ship pulp here, and if they do, some import quarters assert, the tonnage will not be as large as would be the case if a more favorable price was permitted. Some quarters believe that a 5% increase in the OPA price is warranted.

Reports state that Swedish shipping companies are now considering the question of reducing shipping charges to facilitate pulp movement. Manufacturers are endeavoring to bring cargo rates down to $6 per ton from the $12.50 suggested by the War Shipping Administration. The WSA rate, with transshipment fee from the upper Baltic mills to Goteborg added, importers state, would increase total transportation charges to $15 per ton.

Rags

Mill buying of new cotton cuttings continues active. No material change in the supply situation is expected in the market with the end of the war in Europe. Mill demand is expected to continue active for some time and supplies are only expected to increase substantially until the tight textile supply situation improves considerably. Prices are firm at ceiling levels.

Demand for old cotton rags is reported active this week. Roofing grades are in relatively heavy demand and are expected to continue active, as demand for roofing felt is and will continue very heavy for many months. Prices on old rags are firm at ceiling levels.

Old Rope and Bagging

Mill demand for Manila rope continues active and prices are firm at ceiling levels. No change in the supply situation is reported at this date.

Some improvement in activity is reported in scrap bagging at this date. Prices are steady. Roofing bagging is quoted at the OPA ceiling prices in sales to mills, f.o.b. shipping point, at $1.35.

Old Waste Paper

Skill and ingenuity of all waste paper collecting organization will be necessary if the goal of 8,000,000 tons is to be attained, the Department of Commerce reports. The 1945 estimates show that there will be at least 1,000,000 tons less used paper to be salvaged, while the goal is about 1,000,000 tons above 1944 collections. The estimated tonnage of paper available for salvaging will have declined 24% from 1941, the Department stated. This is due to the amount of paper exported on which no recovery is possible. Exports of paper in 1945 are expected to be 300% larger than in 1942. This does not include the paper used in this country by the armed forces or for other military purposes, the Department explained.

Twine

Demand for twine is active this week. No important change in prices or in the supply situation has been reported at this date. Prices in general are firm.

"NON-USERS ARE THE LOSERS"

PROFIT PRODUCERS

TENAX FELTS

CONFIDENCE.....

is yours, always, when your machines are clothed with TENAX FELTS. For over a half-century, in peacetime and wartime, paper makers have relied on the longer life, greater tenacity, faster drying qualities of TENAX, for more profitable, trouble-free operation.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY
Newfane, N. Y. — U. S. A.

KENNEDY
BRONZE GATE VALVES

Simple
Sturdy Durable

Assure easy operation, and lastingly trouble-free service. Available in non-rising and rising stem types; also outside screw and yoke. Built for steam pressures up to 300 lbs.

Buy From Our Distributor

Figure 27
Standard
Screwed Ends

THE KENNEDY VALVE MFG. CO., ELMIRA, N. Y.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 16, 1945.

BLANC FIXE—The market for blanc fixe is reported unchanged for the week. Current demand is reported fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER — Current demand is reported active. Supply situation reported satisfactory. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Supply situation continues tight, with production good and very heavy all-over demand. Manpower limits output. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for some grades of china clay is reported fair this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE — All-over demand heavy. Essential requirements met. Paper allocated 47,705 tons. Prices unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—No offerings at unchanged OPA ceiling prices: "G" gum rosin at $5.75 per 100 pounds, in, barrels, Savannah. "FF" wood rosin is currently quoted at $5.75 per 100 pounds in barrels, New York. Average price of 70% gum rosin size is currently offered at $6 per 100 pounds, f.o.b. works. Conservation Order M-387 of February 28, limits rosin to 70% of 1944 quota for paper.

SALT CAKE—Demand reported moderate. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $16 per ton.

SODA ASH — Market requirements for soda ash continue heavy. Production at capacity. Market tight. Bulk deliveries normal. Bagged lots slow. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Market supply of cash corn reported larger this week. Corn prices lower. Starch quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA — Supply situation reported favorable. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported active for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported fair this week. Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines. Canadian $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$61.00	@	—
Sheets	69.00	@	—
*OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
*OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Lt. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

*OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@$13.30
No. 2 Glossy Coated	12.40 "	14.00
No. 3 Glossy Coated	11.60 "	13.25
No. 4 Glossy Coated	11.15 "	12.75
No. 1 Antique (watermarked)	10.25 "	11.75
No. 2 Offset	9.60 "	11.00
A Grade E. F.	9.35 "	10.75
A Grade S. & S. C.	9.60 "	11.00
B Grade E. F.	8.85 "	10.25
B Grade S. C.	9.10 "	10.50
C Grade E. F.	8.55 "	9.75
C Grade S. C.	8.80 "	10.00
D Grade E. F.	8.25 "	9.50
D Grade S. & S. C.	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	72.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weigh
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50% 80% Air Dry Weigh
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weigh
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

*OPA Maximum Prices

HOW OAKITE CLEANING HELPS MILLS ECONOMIZE ON MAINTENANCE!

Speed Slime Removal The Easy Oakite Way

Removing slime from piping, screen plates, chests, head boxes, save-alls, beaters and other pulp and paper-making equipment must be done QUICKLY, SAFELY, THOROUGHLY. That is why so many mills use Oakite materials and methods specially designed to do this job with a minimum of manual effort, yet with the speed and effectiveness demanded by wartime production.

You, too, will find when you apply solution of Oakite Slime Remover that ALL slime deposits are completely, quickly removed . . . equipment surfaces are left unharmed. Equally important is the low cost of this effective Oakite method.

Write for FREE 28-page booklet giving money-saving data on this and 40 other mill maintenance cleaning jobs.

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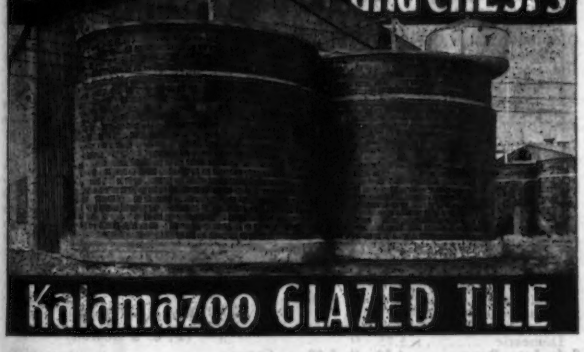
Technical Service Representatives in All Principal Cities of the United States & Canada

OAKITE CLEANING
MATERIALS · METHODS · SERVICE — Buy Bonds for Victory — FOR EVERY CLEANING REQUIREMENT

Perfect for Stock TANKS and CHESTS



Kalamazoo GLAZED TILE

No cracked, flaking or pitted walls when your tanks are constructed throughout with Kalamazoo Vitrified glazed tile. Impervious to practically all chemicals. Walls are smooth and hard, making them easy to clean and free flowing for stock. Most economical and satisfactory type of construction for stock tanks and chests as they are built to LAST.

Widely favored by paper mill executives—and immediately available.

Any Size or Shape—

Kalamazoo Glazed Tile is available in various sizes suitable for lining round or square tanks, half-round or tapered bottoms, or rounded corners. As flexible as poured concrete, being easily fitted to any space or production layout.

● Ask for engineering data.

Kalamazoo TANK & SILO CO.
KALAMAZOO - MICHIGAN

BRANDON DRYER FELTS

Manufactured from the raw cotton to the finished felt

BRANDON EXTRA

TRI-UMPH all cotton, 3 ply 53 oz., widths up to 250".

ZEPHYR all cotton, 3 ply 45 oz., widths up to 196".

ZEPHYR cotton-asbestos 3 ply Face 50% asbestos, back open construction for high porosity. Widths up to 166".

HINDLE S/54 all cotton special weave. Extra heavy duty Preshrunk, high porosity, widths up to 170".

SCAPA-HALL S/46 and S/46A. Available after VICTORY.

Sole Sales Agents

WOODWARD, BALDWIN & CO.

117 W. Baltimore St.

Baltimore, 1, Md.

Representatives:
J. S. Harrington, Watertown, N. Y.
Christian Co., Richmond, Va.
Frank P. Wilder, Portland, Ore.
James A. Taylor & Son, Portland, Maine

Old Rags			
White, No. 1—			
Repacked	*3.80	"	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags			
New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25
Old Rags			
No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.35	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.17	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¾
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¾
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¾
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¾

Domestic Rags (Old)

White No. 1—Repacked	3.80	"	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.90	"	4.50
No. 1 Clean bright—			
Sisal Strings			.84
No. 2 Clean bright—			
Sisal Strings			.83
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.90
Wool Tares heavy	4.00	"	4.25
No. 1 New Light Burlap	3.90	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	3.35
South American	—	"	3.25

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	3.35
South American	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.75
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.04¾
New White No 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06¾	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.04¼
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

VATS and VAT PARTS

We can supply Screen Vats for any flat screen and complete *UNION-WITHAM* Vat Parts for Witham Type Vats.

Deliveries are prompt on priorities of AA-5 or better, MRO. New installations require special certification.

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WORM GEARS
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CENTRIFUGAL PUMPS
PROPELLER PUMPS
CLOGLESS PUMPS
MIXED-FLOW PUMPS
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of Perforated Metal

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Keep 'Em Rolling Faster with Magnus Beatex

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Special Grades for Beater, Calender and Tub Sizing.

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NOW IS THE TIME TO DISCUSS IT—

There's still a big job for all of us to do before Victory comes — but discuss today and be ready tomorrow. Early planning will help you do a better job when we can work in peace.

A LINE OF MACHINES YOU CAN DEPEND ON

PRINTING PRESSES
Rotary, Oil Ink, Aniline, Multi-color, Arc-type, In Series, Bag and Notion Envelope.

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Towel, Tissue, Napkin, Wax, Facial Tissue, Table Covers.

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Toilet, Towels, Crepe, Jumbo Roll.

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Adjustable, Napkin, Multi-Wall Bag.

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Toilet Roll Wrappers, Vacuum Pumps, Seat Cover Machines, Die Inkers, Core Machines, Core Recutters.

PAPER CONVERTING MACHINE CO.
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Manufacturers of paper converting machinery for all purposes.

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Shown here are only three of machines in our line, designed to keep step with modern paper mill production. Two of the items have been serving the industry for years, being improved as operating conditions demanded more and more production. Also is shown one of the new Murray machines, the pulp stock agitator. If you are interested in paper mill or woodroom equipment to aid your production now or increase the efficiency for the post-war period, complete details will be furnished upon request.

MURCO
D. J. MURRAY MANUFACTURING CO.
WAUSAU, WISCONSIN

HELP WANTED

SALES MANAGER

For paper carton specialties. Thoroughly experienced in sales promotion and specialty development. Complete outline of personal record requested.

EMPIRE BOX CORPORATION
Palmolive Bldg., Chicago, Ill.
M-17

One Grad. Chemist or Chemical Engineer with at least two years Pulp or Paper Mill experience for large diversified Pulp & Paper Mill at Ocean Falls, B. C., on Canadian West Coast.

Good opportunity for right man Age 24-35 Salary $200.00-$250.00 per month

Apply Pacific Mills Limited, Ocean Falls, British Columbia.

If a technical person within the meaning of P.C. 246 Part 3 January 1943, do not apply unless your services are available under regulations administered by the Wartime Bureau of Technical Personnel. M-24

PAPER EXECUTIVE

Experienced, thorough, with mill contacts, required by progressive export paper house; unusual opportunity; state age, experience, salary required.

Address Box 45-266 care Paper Trade Journal. M-17

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

STEAM PLANT SUPERINTENDENTS
STATIONARY ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

Address Box 45-275 care Paper Trade Journal. M-31

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

GRADUATE CHEMISTS
GRADUATE CHEMICAL ENGINEERS
GRADUATE MECHANICAL ENGINEERS
COMBUSTION ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

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PLANT MANAGER—Established Philadelphia Plant making high quality bags (self-opening, squares, flats, sacks, specialties) want plant manager experienced in handling production and personnel in union shop. Give full qualifications. Replies held in strictest confidence. Address Box 45-196 care Paper Trade Journal. M-31

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Specializing in Paper Mill Personnel
Positions Now Open

Manager large converting plant, tissues, etc.
Master mechanic and chief engineers $400-500 month
Boss Finisher
Sales manager kraft and board $9,000-12,000 year
Felt Superintendent
Laboratory man for board mill
Chemists (several) and chemical engineers
Cost accountant
Mechanical engineers and draftsmen
Post-war planning engineer $6,000-8,000 year
Coating department foreman, also color matcher
Millwright $60 week, beater engineer, machine and back tenders and many others

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. M-177

WANTED—CHIEF CHEMIST for pulp and paper mill located on Pacific Coast. Apply in own handwriting giving references, experience and other pertinent information. Address Box 45-243 care Paper Trade Journal. TF

COST ACCOUNTANT—.009 straw or box board mill located in the middle west. State salary wanted. Address Box 45-262 care Paper Trade Journal. M-24

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Address Box 45-289 care Paper Trade Journal. M-24

GRADUATE MECHANICAL ENGINEER

with 5 to 10 years experience in the paper industry to take active and responsible part in the selection, layout and installation of new equipment for long-term expansion program. Letters of inquiry giving experience and other pertinent information, including draft and marital status are to be directed to the Employment Manager, Union Bag & Paper Corporation, Post Office Box 570, Savannah, Georgia. Persons now engaged at highest skill in essential industry cannot be considered.

UNION BAG & PAPER CORPORATION
Savannah, Georgia M-31

CHEMICAL AND MECHANICAL ENGINEERS

Wanted for senior positions in manufacturing control in a large printing and converting plant in Niagara Falls. Should be college graduates preferably with paper mill or manufacturing control experience. Give personal data, experience, and salary desired.

Apply B. J. Staneslow, Moore Business Forms, Inc., Research and Service Division, United Office Building, Niagara Falls, New York. M-17

WANTED

ENGINEERS and DESIGNING DRAFTSMEN experienced in pulp and paper mill design and process by Consulting Engineers. Address Box 45-146 care Paper Trade Journal. T.F.

HELP WANTED for New England Book and Specialty Mill — Fourdrinier Machine. One Beater Room Supervisor, experience with colors necessary. Three Machine Tenders. Three Back Tenders. Address Box 45-268 care Paper Trade Journal. M-24

ADJUSTOR—Experienced flat and square paper bag machines—good salary—permanent—Write or visit CUSTOM-MADE PAPER BAG CO., INC., 33rd St. & Skillman Ave., Long Island City, N. Y. J-7

WANTED—Experienced Millwright for small mill in Northeastern Pennsylvania. State age, experience and salary expected. Address Box 45-250 care Paper Trade Journal. M-17

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

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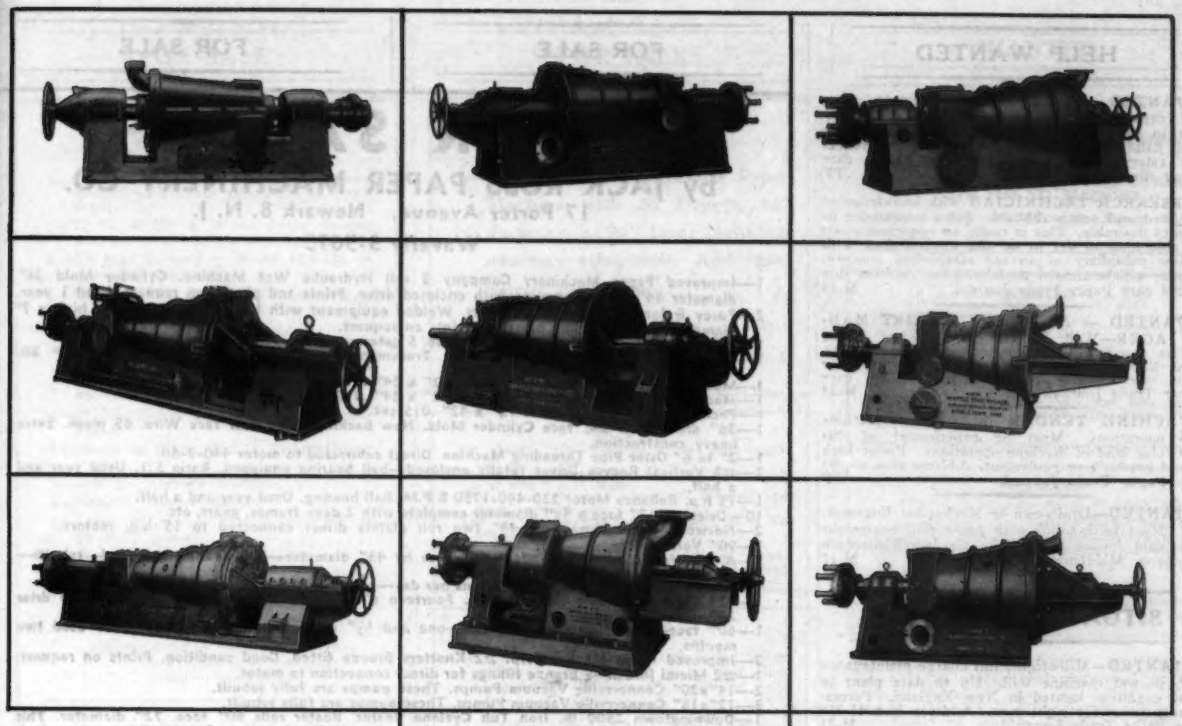

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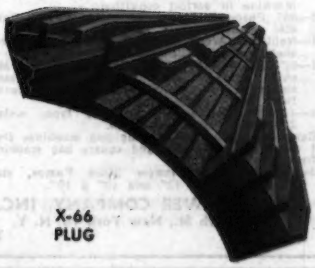

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IF IT'S PLUGS YOU'RE WANTIN'!

Shartle can furnish the best plug ever designed—the X66. Why best? Because there is several times more side metal support in an X66 than you can get in any other plug —which means strength. Scores of mills use X66 plugs. To date not one failure has been reported.

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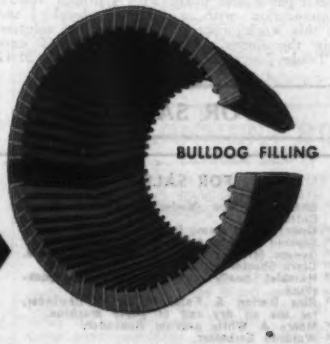

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SHARTLE BROS. MACHINE CO.

MIDDLETOWN, OHIO

Dilts Machine Works, Fulton, New York.
Divisions of Black-Clawson Co., Hamilton, Ohio.

HELP WANTED

WANTED — Licensed Steam Engineer. One capable of handling maintenance and operation in paper mill on Pacific Coast. Apply in own handwriting stating experience, references and salary wanted. Address Box 45-244 care Paper Trade Journal. TF

RESEARCH TECHNICIAN with knowledge of hard and soft wallboard. Some experience in plastics desirable. This is really an opportunity for an able man to get in on the ground floor with a new subsidiary of an old established concern. Replies will be treated confidentially. Address Box 45-284 care Paper Trade Journal. M-24

WANTED — ASSISTANT EXPORT MANAGER—Well known paper export house desires assistant export manager preferably with good knowledge Spanish. Attractive terms for right man. Please reply to Box 45-286 care Paper Trade Journal. M-24

MACHINE TENDER for cylinder machine operations. Must be experienced at this particular kind of machine operations. Prefer high school graduate or equivalent. Address Box 45-293 care Paper Trade Journal. TF

WANTED—Draftsman or Mechanical Engineer. Must be familiar with paper mill equipment and plant layout work. The Gardner-Richardson Company, Middletown, Ohio. M-17

SITUATIONS WANTED

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36" Sheridan "New Model" Automatic Power Cutter.
44" Oswego hand clamp Power Cutter
44" Seybold Holyoke Auto. Power Cutter.
63" Oswego Mill Type Cutter, power back guage.
66" Clark Sheeter with Back Stand
110" Hamblet heavy duty Sheeter with backstand.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
120" Moore & White 4-drum Rewinder.
36" Waldron Embosser.
4 Waldron 36" Paper Reels.

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2—Pusey & Jones Horizontal Digesters. Welded equipment with Logan Circulators. 24' high x 7' diameter. 125# working pressure. Prints on request.
1—Guyton-Cumfer Saturator. Tank 50" wide. 5 gates complete. Prints on request.
1—Waterbury Hydraulic Variable Speed Transmission. Size 50—Type C. Maximum HP 80. Maximum RPM 400.
1—Moore & White Flat Screen. 16 plates 12" x 24" .015 cut.
1—Moore & White Flat Screen. 20 plates 12" x 24" .015 cut.
1—Packer Flat Screen. 10 plates 12" x 42" .015 cut.
1—36" diameter x 84" face Cylinder Mold. New backing wire. New face Wire. 65 mesh. Extra heavy construction.
1—2" to 6" Oster Pipe Threading Machine. Direct connected to motor 440-3-60.
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1—90" Voith Inlet.
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1—No. 1 Voith Pulper—capacity 20 tons per day—requires 20 h.p.
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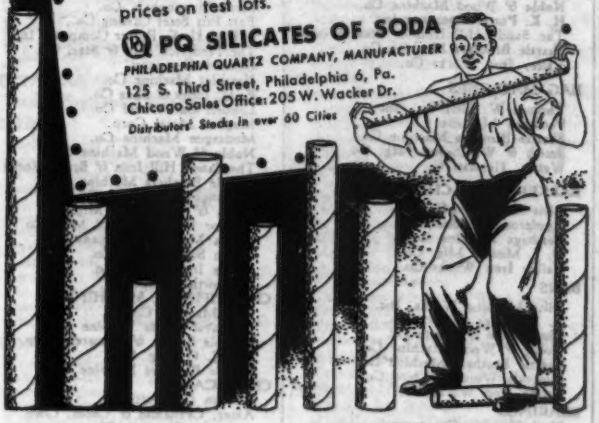

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E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
Ferguson, Hardy S.
Hardy, George F.
Johnson & Wierk, Inc.
The Kohler System Company
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Sonoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Corporation
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kindey Chemical Co.

DIGESTERS
The Biggs Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric Corporation

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrs Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Pitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
American Resinous Chemicals Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Cavel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
N. P. Bowsher
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plaha Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer G.

PUG MILLS
Taylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gotteman & Co., Inc.
Elof Hansson, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Taylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Behr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
American Cyanamid & Chemical Corp.
American Resinous Chemicals Corp.
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Rochlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnesic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co

SIZING
American Cyanamid & Chemical Co.
American Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STAINLESS STEEL
Eastern Stainless Steel Corp.
Industrial Steels, Inc.

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric Corp.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co. Inc.
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.

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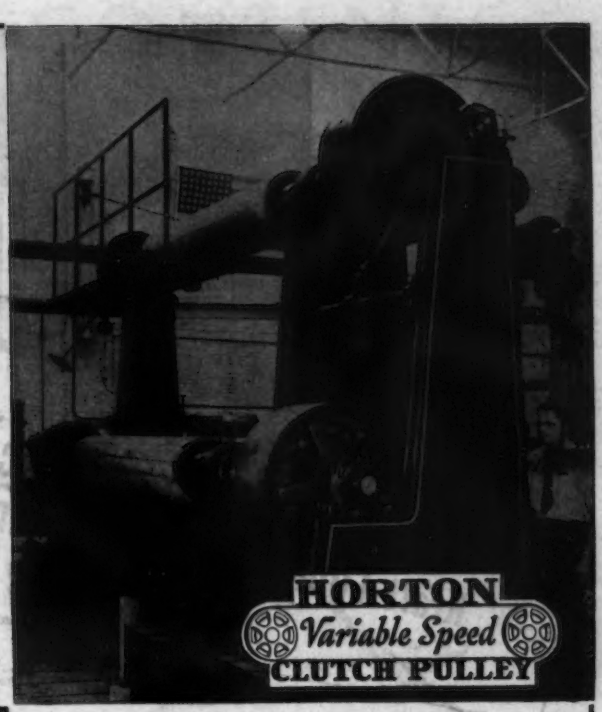
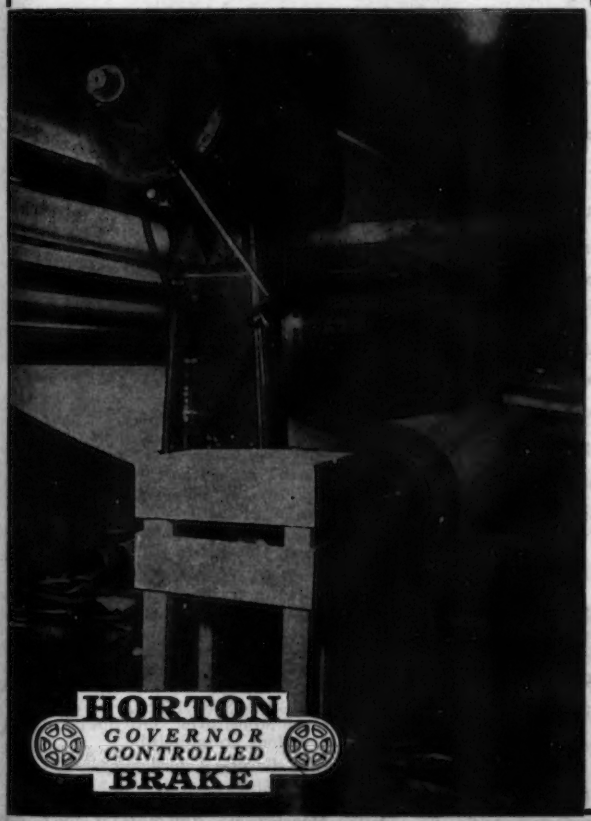
Wright-Hibbard Ind. Elect. Truck Co. 49

Simplify REEL CONTROL on WINDING and UNWINDING



BELOW: Two-bar vertical reel shown in operation, equipped with Horton Water-cooled Governor-Controlled Brakes for unwinding.



ABOVE: Two-bar vertical reel taken during assembly, showing Horton Air-Cooled Variable Speed Clutch Pulleys as drive for winding.

TIGHTER WOUND ROLLS

•

STEPPED-UP PRODUCTION

•

SHOCKLESS STARTING

•

EASY THREADING AND INCHING

•

FRACTIONAL TO 150 HP

Many Other Applications

Write us your variable speed drive problems and engineering data will be furnished.

HORTON MANUFACTURING COMPANY

3012 UNIVERSITY AVENUE S. E., MINNEAPOLIS 14, MINN.

LASTING CORROSION RESISTANCE for Kraft FOURDRINIER WET ENDS!

Wet end of PUSEY & JONES *234-inch news Fourdrinier built for Southland Paper Mills, Lufkin, Texas. Slice lips, wire rolls and other parts are Monel...for lasting resistance to wear and corrosion.*

Mixed Southern groundwood and bleached Kraft stock have little corrosive effect on the Monel parts of this 234-inch **Pusey & Jones** news Fourdrinier.

Proof is found in tests conducted under actual operating conditions.

Stock and white water going over this machine would require 120 years to destroy a 1/16-inch sheet of MONEL by corrosion from one side!

This remarkable resistance to corrosion . . . plus high strength and the ability to withstand wear . . . accounts for the use of Monel in the **Pusey & Jones** wet end pictured above. And it is these qualities, too, which fit Monel especially for the uses listed at the right.

Wherever corrosion causes trouble, mills and machine builders depend on Monel. They rely also on INCO's Technical Staff which is always ready to assist or advise them in selection of the right metal or alloy for a specific job.

When *you* need help on metal and corrosion problems, write to INCO at the address below. At the same time, ask for Bulletin C-3, *Monel, Nickel and Inconel in Pulp and Paper Mills.* It contains valuable information with which you'll want to be familiar before you specify new equipment or make changes in your present machines.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK 5, N. Y.

PRINCIPAL USES OF MONEL ON FOURDRINIER WET ENDS*

Apron Plates—Monel Strip.
Bolts & Other Fastenings.
Beams and Rails—Monel sheet lining over steel or cast iron.
Brace Rods—Cold-drawn Monel rods.
Breast Rolls—Monel covered construction.
Dandy Rolls—Monel body and face.
Distributor Rolls—Perforated Monel tube rolls.
Doctor Blades & Backs—Full hard Monel blades. Sheet and angles for doctor back.
Flow Boxes—Monel linings or self-supporting sheet construction, or built from Nickel-Clad Steel.
Rectifier Plates—Monel sheet.
Remover Beam Rollers—Gall resisting cast "S" Monel.
Remover Cross Drive Shafts—Cold-drawn Monel rods.
Save-All Trays and Pans—Welded Monel sheet construction.
Shaker Springs—"Z" Nickel for leaves with high stroke frequencies.
Shower Pipes & Nozzles—Monel tubing and "R" Monel rod (200BHN) for nozzles.
Slice Blades—Special Tempered cold-rolled Monel strip. Slice lips up to 250" long are supplied.
Suction Boxes—Welded Monel sheet construction.
Table Rolls—Tubing up to 5" O. D. Monel-covered steel tubes for larger diameters.
Wire Return Rolls—1/8" Monel covers over steel tubes.

**Under exposure to corrosive conditions generally met. Monel* is safely used in combination with bronze and copper.

MONEL
NICKEL INCO ALLOYS

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • "Z" NICKEL • NICKEL
Sheet...Strip...Rod...Tubing...Wire...Castings...Welding Rods (Gas and Electric)